LONDON SCHOOL OF TROPICAL MEDICINE
NOT TO BE TAKEN AWAY.

THE FAUNA OF BRITISH INDIA,

INCLUDING

CEYLON AND BURMA.

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MOTHS.—Vol. I.

BY

G. F. HAMPSON.

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ALERE FLAMMAM.

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PREFACE.

Any attempt to enumerate, describe, and classify the Moths of so large a region as British India must, in the imperfect state of our present knowledge, be very incomplete, and more and better workers in this interesting branch of Natural History cannot be expected to come forward until some handbook is provided for them. It has been hitherto impossible to name any but the commonest Indian Moths without access to a library, which does not exist anywhere in the East except at Calcutta, or to collections of species carefully identified by comparison with the types, which collections do not exist in the East at all; and it is hoped that the publication of the Volumes, of which the present is the first, will be of use to students of the subject, and aid a school of workers in the field for the *Heterocera* such as have arisen for the *Rhopalocera* since the publication of the first volume of Marshall and de Nicéville's 'Butterflies of India.'

As no general revision of the *Heterocera* has been attempted since Guenée's time, and as his system is very much out of date, one of the most difficult parts of the present work has been the scheme of classification and the correct placing of the very numerous species which had been described. It is, however, hoped that, by collating the systems of writers who have worked at special groups, a natural scheme in accordance

with modern ideas on the subject has been evolved, and that the keys and illustrations will render this scheme intelligible to students and enable them to follow the characters given. In the preparation of the system now proposed I have been much indebted to Herr P. C. T. Snellen's 'Vlinders van Nederland,' the only recently attempted classification of the families of Moths that I know of. How admirable a classification it is may be judged of by the fact that I have found his system, based on the small fauna of the Netherlands, applicable with but slight modifications to the large tropical fauna of India.

The material available for study has been almost complete as far as it exists, and the descriptions have been drawn up and the synonymy worked out, in the large majority of cases, from the types of the species, so that it is hoped that comparatively few errors will have crept in. No pains have been spared to compare as large a series of each species as was possible, and as most of the species were originally described from single specimens by their authors, who did not always make sufficient allowance for the variation that is known to exist amongst the Moths of Europe and other countries where they have been largely bred, the synonymy has been lengthy and difficult to unravel; and though some may think that more has been done in uniting species than will be justified by a future study of the subject, yet as the individual peculiarities of each form have been indicated this will but help to show their affinities.

In very few localities in British India have the Moths been collected systematically enough over a large number of years to give results approaching completeness. Sikhim and Ceylon are certainly the best-worked tracts. The former yielded the greater part of the fine collection made by the late W. S. Atkinson, now in the possession of Dr. Staudinger

at Dresden, the only large Indian collection which has not been available for reference. The disadvantage caused by want of access to Mr. Atkinson's Collection has, however, been greatly diminished by the co-types and drawings belonging to Mr. F. Moore, who originally described the collection, being placed freely at my disposal, and by the fact that Mr. H. G. Elwes spent a fortnight at Dresden comparing his magnificent Sikhim Collection with the types there, and making numerous notes, of which I have been allowed the fullest use. I have also examined the more recent collections made in that district by the late Otto Möller and by Messrs. Elwes and Knyvett, which are now described for the first time.

Of the Moths of the N.W. Himalayas, the fine collections of the Rev. J. H. Hocking and Majors Yerbury and Harford (the last of whom made beautiful drawings of the early stages of many species) give a very good idea: all three collections are now in the British Museum. The collection made by Mr. J. H. Leech in Kashmir has been lent to me for study and description of the new species, and free access has been given to me for purposes of comparison to his unrivalled Japanese and Chinese collections.

The Moths of Bombay, Poona, and other localities in W. India have been largely worked by Col. C. Swinhoe, who has lent to me any specimens required for study or figuring from his very large Indian Collection, and has also enabled me to compare Walker's types of Moths in the Oxford Museum, which he is now engaged in arranging, with the British Museum collection; by this comparison numerous valuable facts have been elicited. Of the Moth-fauna of the Nilgiris my own collection gives a fairly complete picture, as, though my collecting did not extend over many years, it was carried on at all the different elevations and on each of the several slopes.

The Ceylonese fauna is perhaps the one that has been the best worked, and the only one where any large study of the earlier stages has been made; the collections of Dr. Thwaites, and the earlier collections of Messrs. Mackwood, E. E. Green, and many others, were all described by Mr. Moore in his 'Lepidoptera of Ceylon,' and the drawings of larvæ figured by him; whilst the later collections of Messrs. Mackwood, Green, Butt, and others, all now in the British Museum, have been described by myself in the part of the 'Illustrations of Heterocera' to be shortly issued.

In the Assamese and Burmese regions the fine collections made by Mr. W. Doherty in Upper Assam, the Nága Hills, and various localities in the Burmese hill-ranges, now in Mr. Elwes's collection, are described for the first time, as also the collection made by Mr. E. Y. Watson in Burma, and presented by him to the British Museum, the collection made by L. Feá and lent to me by the Genoa Museum, and that made by Mr. Doherty in the Tenasserim Valley lent to me by Mr. H. Druce; whilst the collections of the Rangoon Museum, and those made in the Khási Hills by the Rev. W. Hamilton, both described by Col. Swinhoe, have also been available; as also have the few species described from the Andamans and Nicobars. It is, however, from these eastern regions that by far the largest number of novelties will appear, and sufficient is known of the fauna to show how largely Malayan types are there represented.

Thus, although the localities in which systematic collecting has been done are few, they represent all the extremes of the various climatic differences which occur in India, so that it may be assumed that sufficient is known of the Heterocerous fauna to give some approach to completeness, to prove that it is quite as diverse and specialized as in other parts of the world, and to show that the main lines of geographical dis-

tribution, as laid down from the study of the Mammalia, Birds, Reptiles, Fishes, and Butterflies, are applicable also to the Moths, though the more cosmopolitan distribution of the genera and our imperfect knowledge of the Moths of the surrounding regions do not enable us to define the subregions as accurately as in other orders.

To the authorities of the British Museum, and to the assistant-keeper, Mr. A. G. Butler, I am indebted for much help and the fullest opportunities of studying the National Collection, which contains almost all the types of Walker, Butler, Swinhoe, and many others, so that the main portion of the present work had necessarily to be done at the Museum.

To Mr. H. G. Elwes in especial my thanks are due for being the originator of the idea of the work, for reading over and correcting the whole of the proofs, and for much invaluable advice and assistance, besides placing his whole collection at my disposal. Mr. F. Moore has given me free access at any time to his rich collection containing most of his types, and has lent me every specimen and drawing wanted, help all the more generous in that he has his own 'Lepidoptera Indica,' which will deal with the same subject, in progress. My best thanks are also due to Mr. E. Meyrick for his extremely useful criticism of the key to the families, to Lord Walsingham and Mr. J. H. Durrant for help with the *Tinægeriidæ*, to the Hon. W. de Rothschild for the loan of specimens, and to my artist, Mr. H. Knight, for the careful way he has carried out the drawings of structure.

In conclusion, I may say that the other two volumes have made such progress that I hope they will be published within the next three years, bringing the work down to the end of the *Pyralidæ* proper, which is all that is contemplated for the present. The material for the other families is almost

entirely in Lord Walsingham's collection, and will be worked out by him, so that it will not be necessary for others to deal with it, excepting the *Crambite, Phycid,* and *Gallerid* sections of the *Pyralidæ,* which cannot be satisfactorily worked out till M. Ragonot publishes his monograph in the Romanoff Memoirs.

G. F. HAMPSON.

November 27th, 1892.

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LEPIDOPTERA HETEROCERA.

Butterflies and Moths, *Lepidoptera*, are for the most part easily distinguishable from other insects by :—(1) the maxillæ being produced into a tubular proboscis, which, however, is entirely obsolete in some groups, such as the *Psychidæ*, *Hepialidæ*, *Phaudinæ*, *Saturniidæ*, and some *Sesiidæ*, *Pyralidæ*, &c.; (2) by the mandibles being obsolete except in the low forms (*Micropterygidæ*) and a few *Tineidæ*; (3) by the broad, regularly veined wings, nearly always covered with minute scales, which are modified hairs, all the gradations between the extreme forms of hair and scale being often found on the same insect; the females, however, of Psychids and some *Lymantriidæ*, Geometers, Tineas, &c. are wingless.

The Larvæ are cylindrical and worm-like, consisting of a head with biting mandibles and eleven somites; they have three pairs of corneous, jointed, thoracic limbs, and from one to five pairs of abdominal fleshy prolegs, the legs being but rarely absent, as in most *Psychidæ*; most of the somites have paired, lateral, valved stigmata, for conducting the air-supply to the tracheal system, which ramifies throughout the body. The Larvæ, when full-fed, turn to Pupæ, in which stage the head and thorax are soldered together, as are also the appendages of the head and the limbs. During this stage the whole of the tissues of the body undergo degeneration into a liquid fatty substance, except the nerve-centres and some bodies attached to them known as "imaginal disks," which are the rudiments of the future body, wings, and legs, and which, by absorbing the products of the degenerated tissues, gradually grow and build up the perfect insect till ready to emerge from the Pupa skin.

The *Heterocera*, or Moths, in their perfect stage, may be known from the *Rhopalocera*, or Butterflies, by the latter having knobbed or dilated antennæ, which in all the families except *Hesperiidæ* have an abruptly rounded extremity; in most *Hesperiidæ* the knob of the antenna is produced into a hooked tip, gradually fining to a point, and this form of antenna is found in some moths, such as the *Castniidæ* and some *Sesiidæ*, but in these families the "frenulum" or hook for securing the hind wings to the catch or "retinaculum" of the fore wing is always present. This is never developed in any butterfly, whilst the families of moths that have the frenulum absent, the *Saturniidæ*, *Bombycidæ*, *Hepialidæ*, *Lasiocampidæ*, some *Callidulidæ*, &c., never have the antennæ knobbed. Some other families of moths, such as the *Sphingidæ*, and in a lesser degree the *Agaristidæ*, have the antennæ gradually thickened into a club; but this is very different from the abrupt knob of butterflies, and in these moths again the frenulum is always present.

The head of a Lepidopterous insect consists of three pieces—the occiput or basal piece lying behind the ocelli, the epicranium

behind the antennæ and bearing the eyes and ocelli, and the clypeus, which constitutes the front of the head and is so distinctive of the *Lepidoptera* by reason of its large size. The labrum is very minute

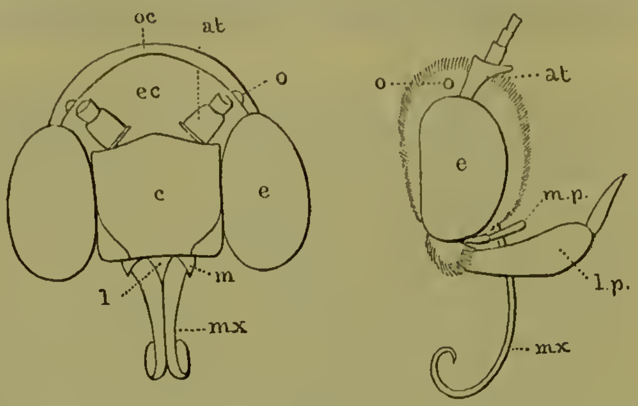

Fig. 1.—Head of a Lepidopterous insect from above and from the side. (From Packard's Guide, p. 232.)

at. Antennæ.
c. Clypeus.
e. Eye.
l. Labrum.
m.p. Maxillary palpi.
o. Ocellus.
ec. Epicranium.
oc. Occiput.
m. Mandibles.
mx. Proboscis.
l.p. Labial palpi.

and concealed by the clypeus; the labium is small, short, and triangular; and the mentum nearly obsolete, its place being supplied by the maxillæ, which form a long grooved proboscis. In some important papers by A. Walter *, it is shown that the maxillary palpi, whilst obsolete in some species, are from 1- to 6-jointed in those that possess them; *Micropteryx* has the largest number of joints, 6; in the Tineas and Tortrices the number is very variable; in the Pyrales 4, in the Noctues generally 2, but sometimes 3; in the Bombyces 1 or 2; in *Rhopalocera*, *Sphingidæ*, and most *Geometridæ*, 1.

Mandibles exist in *Micropteryx* and a few other *Tineidæ*; *M. aruncella* and *anderschella* have them toothed and capable of gnawing, whilst in *M. purpurella* and *semipurpurella* they are not denticulated; in these the maxillæ have two palps, whilst in the higher *Lepidoptera* the inner palps are reduced. In the lower forms of *Micropteryx*, which connect the *Lepidoptera* with the lower *Hymenoptera* or *Neuroptera*, the free palps and typical ligula of the lower insects are present, the ligula being formed by the fusion of the inner palps into a short tubule open externally, a short hypopharynx being present on the inner wall. In the higher *Lepidoptera* the mandibles are rudimentary and consist of horny tubules; the labial palpi are generally well developed and consist usually of three joints, their shape being of great use in generic distinction; they may, however, be reduced to two joints or to one, or be entirely absent in the families in which the mouth-parts are obsolete.

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* Jena. Zeit. Nat. xviii, pp. 121–173 (1884), and Jena. Ges. 1885, pp. 19–27.

The antennæ are of very different forms, either (1) filiform, (2) fusiform, or (3) dilate, and are rarely simple, but usually (1) ciliate, (2) with paired bristles at each joint, (3) with both cilia

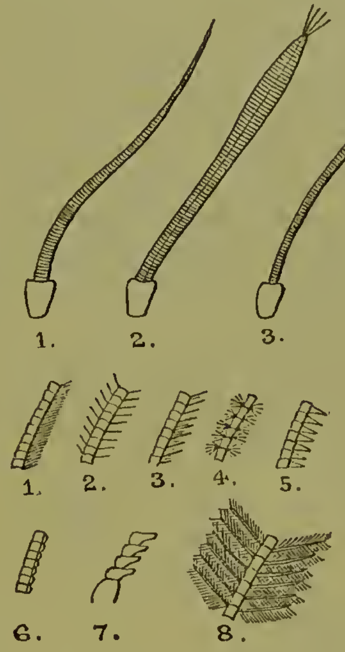

Fig. 2.—Antennæ of moths.

and bristles, (4) fasciculate, (5) toothed, (6) lamellate, (7) serrate, or (8) pectinate, with single or paired branches.

The thorax is small and consists of three pieces—the prothorax bearing the fore legs, the mesothorax the mid legs and fore wings, and metathorax the hind legs and hind wings.

The legs consist of (1) coxa, (2) trochanter, (3) femur, (4) tibia,

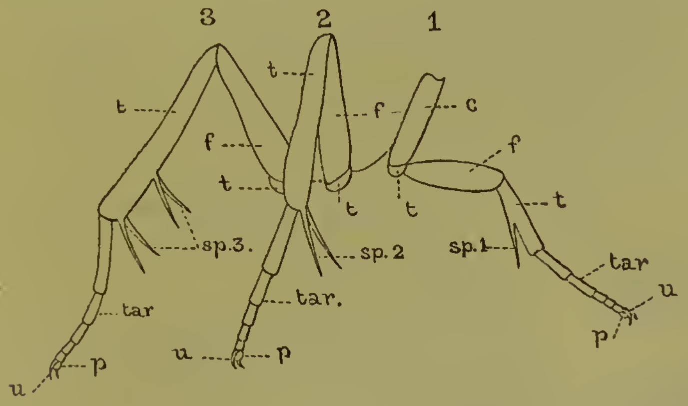

Fig. 3.—Legs of moths. (From Packard's Guide, p. 231.)
1. Fore leg. 2. Mid leg. 3. Hind leg.

c. Coxa.
t. Trochanter.
f. Femur.
t. Tibia.
tar. Tarsus.
u. Ungues.
p. Pulvillus.
sp. 1. Single anterior spur.
sp. 2. Paired medial spurs.
sp. 3. Two pairs of posterior spurs.

(5) the 5-jointed tarsus bearing a pair of ungues and the pulvillus. The fore tibiæ bear on their inner side a process which is usually small, but large and arising from the femoro-tibial joint in many Psychids and a few other forms. The mid tibiæ usually have a terminal pair of spurs, the hind tibiæ medial and terminal pairs, the inner spur of each pair being often much longer than the outer spur. The spurs are as a rule least developed in the higher groups of moths, more developed in the lower *Noctuidæ* and *Geometridæ*, longer still in the *Microlepidoptera* (*Tineidæ*, *Pyralidæ*, &c.), and reaching the extreme of development in the *Pterophoridæ*. The legs often bear tufts of scales or hairs, developed as scent or sensory organs, and the hind legs are often extremely aborted and modified as sensory organs, especially in the *Hepialidæ* and in the subfamily *Acidaliinæ* of the *Geometridæ*.

The wings consist of membrane more or less covered with scales or hairs, which have their bases inserted in series of pits, and overlap one another like tiles. The membrane is traversed by systems

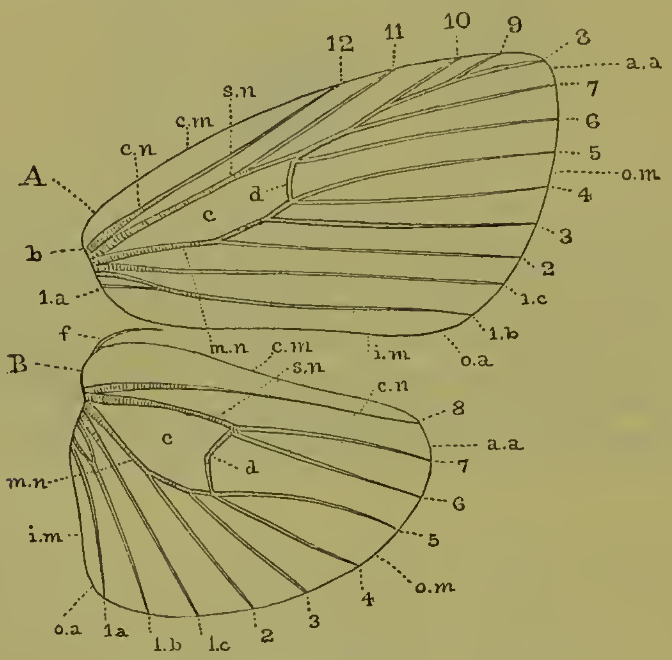

Fig. 4.—A. Fore wing; B. Hind wing.

c.m. Costal margin.
o.m. Outer margin.
i.m. Inner margin.
a.a. Apex.
o.a. Outer angle.
c. Discoidal cell.
d. Discocellulars.

c.n. Costal nervure, vein 12 of fore wing, 8 of hind wing.
s.n. Subcostal nervure.
m.n. Median nervure.
1 *a*, *b*, *c*. Three branches of internal nervure.
2, 3, 4. Three branches of median nervure.
5. Lower radial.
6. Upper radial.
7, 8, 9, 10, 11. Five subcostal branches of fore wing.
7. Subcostal nervure of hind wing.

of veins, which are tubular structures containing blood-vessels, nerves, and tracheæ.

The fore wing typically has 12 veins—the internal nervure with from one to three branches (1 *a*, *b*, *c*), 1 *a* generally forming a

fork at the base of 1 *b*; the median nervure with its three branches (2, 3, 4); the lower radial (5); the upper radial (6); the subcostal with five branches (7, 8, 9, 10, 11); and the costal nervure (12); but almost any of these may be absent.

The hind wing typically has eight veins, the difference from the fore wing consisting in the absence of four of the subcostals; but vein 11 is probably represented by the bar between veins 7 and 8, present in *Sphingidæ*, *Eupterotidæ*, *Zygænidæ*, &c. In the *Hepialidæ* and *Micropterygidæ*, however, twelve veins are present as in the fore wing. Besides the true veins, cross veins, or veinlets between the costal nervure and costa, or between vein 1 *b* and the inner margin of the fore wing, may be present in lowly organized forms, or even in higher ones. The present form of neuration arose from a system of simple longitudinal veins, which by the union of their basal portions formed the present branching system; thus the discocellulars which close the cell of each wing were formed by the junction of the basal portion of two veins, the basal stem being then aborted, leaving only an outwardly directed fork of which the radials are the extremities; in the cases where the radials are said to arise from the discocellulars, and not from the angles of the

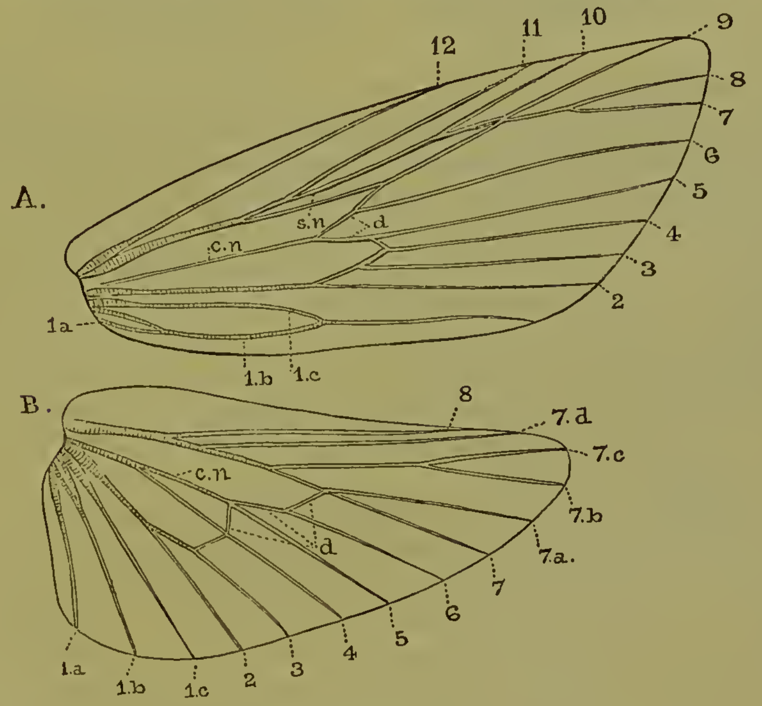

Fig. 5.

A. Fore wing of *Cossid* (slightly diagrammatic).
c.n. Veinlet in cell, the fork of which forms the discocellulars *d.*
s.n. Stalk of veins 9, 10; 10 anastomosing with 7 and 8 to form the areole.
B. Hind wing of *Hepialid* (slightly diagrammatic).
7, *a*, *b*, *c*, *d*. Five subcostal nervules.

cell, the basal portions of one or two other longitudinal veins have also been aborted: the whole process in its various stages is seen to perfection in such lowly forms as many Cossids, Psychids,

Zygænids, &c. Thus the neuration of the extinct ancestor of the *Lepidoptera* consisted of at least fifteen simple longitudinal veins to each wing, and probably more, as in many groups vein 1 *b* of the hind wing is forked at the base.

The fore and hind wings of the majority of families of moths are united by a "frenulum" arising from the base of the costa of the hind wing and fitting into a "retinaculum" on the fore wing,

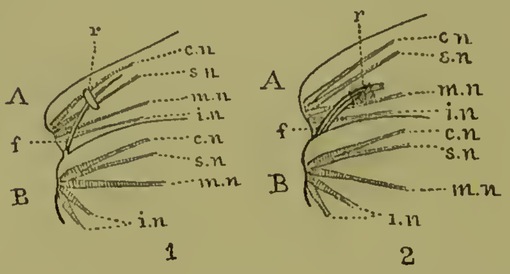

Fig. 6.

1. ♂; 2. ♀.—A. Fore wing; B. Hind wing.
f. Frenulum. *s.n.* Subcostal nervure.
r. Retinaculum. *m.n.* Median nervure.
c.n. Costal nervure. *i.n.* Internal nervure.

which consists of a fold from the underside of the costa, a hook or tuft of hair arising from the lower side of the costal nervure, or a tuft of hair arising from the upper side of the median nervure or rarely from the wing-membrane below it. The form of the frenulum is of great use in determining sex, as in the males of all the forms that possess it it consists of hairs firmly soldered together so as to form a single bristle, whilst in nearly all females it consists of three or more bristles which are shorter than that of the male; in one female *Cossid* I have found as many as nine. Also in the large majority of moths the retinaculum descends from the costal nervure in the male, whilst in the female it ascends from the median nervure.

The abdomen consists of eight or nine segments, the number varying in closely allied genera, so that the genital and anal openings lie usually behind the eighth but sometimes behind the ninth segment. The genital armour in the female is very simple, consisting of two valve-like pieces, whilst in the male it is much more complicated, forming long curved hooks for clasping the abdomen of the female; these are said to be of great use for specific and but little for generic distinction, but the day is far distant when they will have been sufficiently studied to be made use of.

The tendency in *Lepidoptera*, as in other groups, is for forms from the N.W. Himalayas to be large and pale, from the E. Himalayas and Burma to be large and dark, from the arid parts of Continental India to be small and pale, from the moist forests of S. India and Ceylon small and dark. Such geographical forms

have in many cases deservedly received names; they will, however, be treated as of subspecific value only, partly as giving a truer idea of their real value, and partly because the evidence is so often insufficient to show whether the forms are varieties or geographical races, points which must be left to local workers to elucidate.

The range in space given for many of the species will necessarily be found very imperfect; all the large collections in England have, however, been consulted, to make them as correct as possible, and all recorded localities are quoted except a few given by the older authors which are certainly wrong, those that are considered doubtful being indicated by a ?

Transverse markings are described as bands and lines; and longitudinal as fasciæ and streaks.

Species of which specimens were not available, and of which the descriptions are taken from those in print, are indicated by a *.

When the sex is not specified the descriptions, measurements, &c. apply to both sexes.

The following references are given: one to the original description, one to each synonym, one to the best coloured figure, one to a description or figure of the larva, and one to Cotes and Swinhoe's 'Catalogue of the Moths of India,' which must be consulted if fuller references are wanted.

Microscopic slides have been prepared of several genera in each family, and the structural details are all taken from drawings made by the author, elaborated and worked up by the artist. Secondary and sexual characters are treated as of subgeneric value—tufts of scales on the legs, modified patches on the wings, fans of scent-hairs, and such-like, besides being eminently variable, are often present or absent in very closely allied species. The most valuable of these characters is the development of pectinations, serrations, cilia, &c. on the male antennæ; but if these are used for generic distinction, we have the inconvenience of not knowing to what genus a species belongs till we have the male.

The development of secondary sexual characters sometimes distorts the form to such an extent that the generic and even family characters are entirely obliterated, as in the males of *Patula* and *Argiva*, and the female is then the sex that is of greatest value in showing affinity. The contrary often occurs, as in the wingless females of *Solenobia*, *Psychidæ*, *Heterogynidæ*, and some *Lymantriidæ* and *Geometridæ*, these being cases of degradation sometimes in connection with a parthenogenetic mode of reproduction.

Starting from *Micropteryx* with its biting mouth-parts as the nearest ally to the theoretical ancestor (x) of the *Lepidoptera*, we may construct some such genetic tree as follows:—

Epicopiidæ.
Saturniidæ.
Uraniidæ.
Ceratocampidæ.
Geometridæ.
Epiplemidæ.
Brahmæidæ.
Bombycidæ.
Eupterotidæ.
Sphingidæ.
Notodontidæ.
(Cyphanta.)
Cymatophoridæ.
Agaristidæ.
Noctuidæ Trifidæ.
Lymantriidæ.
Limacodidæ.
Endromiidæ.
Hypsidæ.
Lasiocampidæ.
Noctuidæ Quadrifidæ.
Pterothysanidæ.
Arctiidæ.
Hypeninæ.
Lithosiinæ.
Syntomidæ.
Castniidæ.
Callidulidæ.
Nycteolinæ.
Zygænidæ.
Chalcosiinæ.
Drepanulidæ.
Phaudinæ.
Alucitidæ.
Nolinæ.
Pterophoridæ.
Thyrididæ.
Arbelidæ.
Cossidæ.
Heterogynidæ.
Tortricinæ.
Sesiidæ.
(Alavona.)
Psychidæ.
Pyralidæ.
Tinægeriidæ.
(Solenobia.)
Tineidæ.
Hepialidæ.
Micropterygidæ.
x

Key to the Families of Moths.

I. Antennæ knobbed or dilated; frenulum absent	**RHOPALOCERA.** (BUTTERFLIES.)
II. Antennæ rarely knobbed; frenulum generally present, and always in the forms that have knobbed antennæ	**HETEROCERA.** (MOTHS.)
A. Fore wing with vein 5 from the centre of discocellulars, or nearer 6 than 4.	
a. Frenulum rudimentary	27. **Epicopiidæ.**
b. Frenulum absent.	
a'. Proboscis present; legs with spurs.	
a^2. Hind wing with vein 8 remote from 7.	
a^3. Fore wing with veins 6 and 7 stalked	28. **Uraniidæ.**
b^3. Fore wing with veins 6 and 7 not stalked	* **Ceratocampidæ.**
b^2. Hind wing with vein 8 nearly touching 7 after end of cell	2. **Brahmæidæ.**
b'. Proboscis absent; legs without spurs.	
a^2. Hind wing with one internal vein	1. **Saturniidæ.**
b^2. Hind wing with two or three internal veins	3. **Bombycidæ.**
c. Frenulum present.	
a'. Antennæ fusiform	5. **Sphingidæ.**
b'. Antennæ filiform.	
a^2. Proboscis absent	4. **Eupterotidæ.**
b^2. Proboscis present.	
a^3. Hind wing with vein 8 curved and almost touching 7 after end of cell; vein 1 *a* reaching anal angle	7. **Cymatophoridæ.**
b^3. Hind wing with vein 8 remote from 7 after end of cell.	
a^4. Tarsi short as tibiæ and hairy: stoutly built moths.	6. **Notodontidæ** †.
b^4. Tarsi long and naked: slightly built moths.	
a^5. Fore wing with vein 7 remote from 8, and generally stalked with 6	29. **Epiplemidæ.**
b^5. Fore wing with vein 7 given off from 8; hind wing with vein 1 *a* short or absent.............	30. **Geometridæ** ‡.

* Not known to occur in India.

† The genus *Cyphanta* has vein 5 of the fore wing from lower angle of cell, and may be a connecting link with the *Noctuidæ*.

‡ Three genera of *Geometridæ* which do not occur in India have vein 8 of the hind wing curved, and nearly touching 7 after end of cell, but are easily distinguished from the *Cymatophoridæ* by the shortness of vein 1 *a*. In two or three ancestral or distorted genera vein 7 of the fore wing is stalked with 6; and in several genera the frenulum is absent.

B. Fore wing with vein 5 from lower angle of cell or nearer 4 than 6.
- *a*. Hind wing with more than 8 veins.
  - *a'*. Proboscis absent; no mandibles nor ligula .... 15. **Hepialidæ.**
  - *b'*. Mandibles, free palps, and ligula present .... * **Micropterygidæ.**
- *b*. Hind wing with not more than 8 veins.
  - *a'*. Hind wing with vein 8 remote from 7 after origin of veins 6 and 7.
    - a^2. Frenulum absent.
      - a^3. Hind wing with one internal vein; vein 8 with a precostal spur .... 21. **Pterothysanidæ.**
      - b^3. Hind wing with two internal veins.
        - a^4. Hind wing with a bar between veins 7 and 8 near the base; vein 1 *a* to middle of inner margin .... * **Endromiidæ.**
        - b^4. Hind wing with no bar between veins 7 and 8; vein 1 *a* to anal angle.......... 20. **Lasiocampidæ.**
      - c^3. Hind wing with three internal veins .... 14. **Arbelidæ.**
    - b^2. Frenulum present.
      - a^3. Hind wing with vein 8 aborted. 10. **Syntomidæ.**
      - b^3. Hind wing with vein 8 present.
        - a^4. Antennæ knobbed .... * **Castniidæ.**
        - b^4. Antennæ filiform, or rarely dilated.
          - a^5. Fore wing with vein 1 *c* present.
            - a^6. Hind wing with vein 8 free from the base or connected with 7 by a bar.
              - a^7. Proboscis present .. 11. **Zygænidæ** †.
              - b^7. Proboscis absent.
                - a^8. Palpi rarely absent; ♀ winged; larvæ wood-borers .... 13. **Cossidæ.**
                - b^8. Palpi absent; ♀ apterous.
                  - a^9. ♀ rarely with legs; ♀ and larvæ case-dwellers ...... 12. **Psychidæ.**
                  - b^9. ♀ and larvæ free. * **Heterogynidæ.**
            - b^6. Hind wing with vein 8 anastomosing shortly with 7.............. 19. **Limacodidæ.**

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* Not known to occur in India.

† In the degraded subfamily *Phaudinæ* the mouth-parts are absent, and in *Himantopterus* there is no frenulum; in *Anomœotes* vein 1 *c* of the fore wing is absent.

b^5. Fore wing with vein 1 *c* absent.

  a^6. Hind wing with vein 8 rising out of 7 .... 24. **Arctiidæ** *.

  b^6. Hind wing with vein 8 connected with 7 by a bar, or touching it near middle of cell.

    a^7. Palpi with the third joint naked and reaching far above vertex of head; proboscis present...... 23. **Hypsidæ.**

    b^7. Palpi not reaching above vertex of head; proboscis absent or very minute ...... 22. **Lymantriidæ** †.

  c^6. Hind wing with vein 8 anastomosing shortly with 7 near the base; proboscis well developed.

    a^7. Antennæ more or less dilated............ 25. **Agaristidæ.**

    b^7. Antennæ filiform.... 26. **Noctuidæ** ‡.

b'. Hind wing with vein 8 curved and nearly or quite touching vein 7, or anastomosing with it after origin of veins 6 and 7.

  a^2. Hind wing with vein 1 *c* absent.

    a^3. Hind-wing vein 8 with a precostal spur .... 16. **Callidulidæ.**

    b^3. Hind-wing vein 8 with no precostal spur.

      a^4. Hind wing with vein 1 *a* absent or very short ...... 17. **Drepanulidæ.**

      b^4. Hind wing with vein 1 *a* almost or quite reaching anal angle .... 18. **Thyrididæ.**

  b^2. Hind wing with vein 1 *c* present. 31. **Pyralidæ** §.

C. Fore wing with veins 4 to 11 arising from the cell at almost even distances apart.

  a. Wings not divided into plumes.

    a'. Hind wing with vein 8 coincident with 7 .... 8. **Sesiidæ.**

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* In a few *Arctiinæ* vein 8 of the hind wing is constructed as in *Noctuidæ*, but they can be discriminated by the bar form of the retinaculum in ♂; for *Lithosiinæ*, *Nycteolinæ*, and *Nolinæ*, see notes to the subfamilies.

† In the ancestral genus *Ratarda* the frenulum is absent.

‡ A few genera of *Noctuidæ* have the proboscis aborted.

§ In a few lowly *Pyralidæ* the veins of the fore wing are given off at even distances from the cell, but they can be discriminated by the structure of vein 8 of the hind wings.

b'. Hind wing with vein 8 free.
  a^2. Fore wing with vein 1 b simple or with a very minute fork at base .... 9. **Tinægeriidæ.** /. 206
  b^2. Fore-wing vein 1 a forming a large fork with 1 b at base .... 32. **Tineidæ.**
b. Wings divided into plumes.
  a'. Fore wing divided into at most two; hind wing into three plumes .... 33. **Pterophoridæ.**
  b'. Fore wing and hind wing each divided into three plumes........ 34. **Alucitidæ.**

Family SATURNIIDÆ.

Large crepuscular-flying moths. Proboscis absent; palpi minute. Antennæ bipectinated in both sexes, the branches long in ♂, longest at middle and diminishing to base and apex. Legs short, hairy, and without spurs. Fore wing with vein 1 b forked at base; 1 c absent; the discocellulars (when present) emitted from vein 5, which is stalked with 6; veins 10 and 11 absent. Hind wing without a frenulum; a precostal vein slightly developed; the discocellulars emitted from vein 5, which is stalked with 6; one internal vein.

Larvæ smooth, with spiniferous tubercles, dorsal humps, long fleshy spinous processes, or small warts; and forming cocoons, those produced by several of the species giving the Tussur silks of commerce.

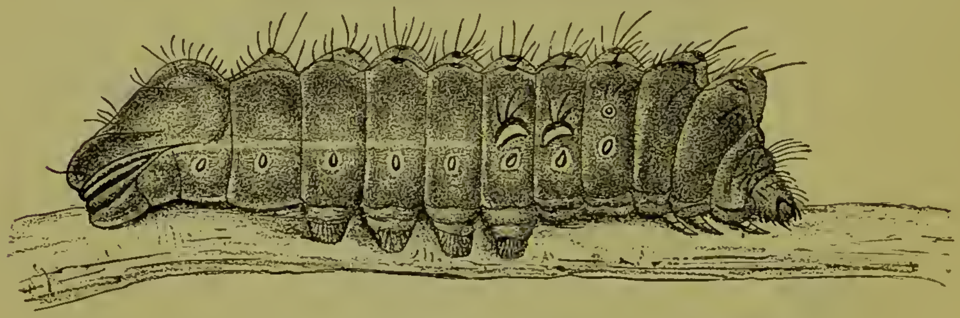

Fig. 7.—Larva of *Antheræa paphia*. ½. (From Moore, Lep. Ceyl. ii, pl. 125, fig. 1 *b*.)

Key to the Genera.

a. Hind wing with anal angle produced into a long tail................................ 1. ACTIAS, p. 13.
b. Hind wing with anal angle not produced into a tail.
  a'. The cell of both wings open .... 2. ATTACUS, p. 15.
  b'. The cell of both wings closed.
    a^2. Veins 5 and 6 of both wings given off far from base.

a^3. Fore wing with costa incurved near base, excurved towards apex; the the outer margin highly excised . . 3. ANTHERÆA, p. 18.
b^3. Fore wing with the costa evenly curved; outer margin less excised.
a^4. Fore wing with apex rounded.
a^5. Tibiæ naked . . . . 4. SATURNIA, p. 21.
b^5. Tibiæ hairy . . . . 5. LOEPA, p. 25.
b^4. Fore wing with apex acute . . . . . . 6. SALASSA, p. 26.
b^2. Veins 5 and 6 of both wings given off much nearer the base . . . . 7. CRICULA, p. 28.

Genus **ACTIAS.**

Actias, *Leach, Zool. Misc.* ii, p. 25 (1815).
Tropæa, *Hübn. Verz.* p. 152 (1818).
Plectropteron, *Hutton, Trans. Ent. Soc.* v, p. 45 (1847).
Argema, *Wallengr. Öfv. Kongl. Vet.-Ak.* 1858, p. 140.

Type, *A. luna*, Linn., from N. America.

Range. N. America; Natal; Japan; China; throughout India, Ceylon, and Burma; Andamans.

Fore wing with the apex produced and acute. Hind wing with the anal angle produced into a long tail, veins 2, 3, 4 being curved and running to the tip of the tail.

1. **Actias selene**, *Hübn. Samml. exot. Schmett.* i. pl. 172, fig. 3; *C. & S.* no. 1534; *Moore, Lep. Ceyl.* ii. pl. 126, figs. 1, 1 *a* (larva).
Plectropteron dianæ, *Hutt. A. M. N. H.* xvii, 1846, p. 60.

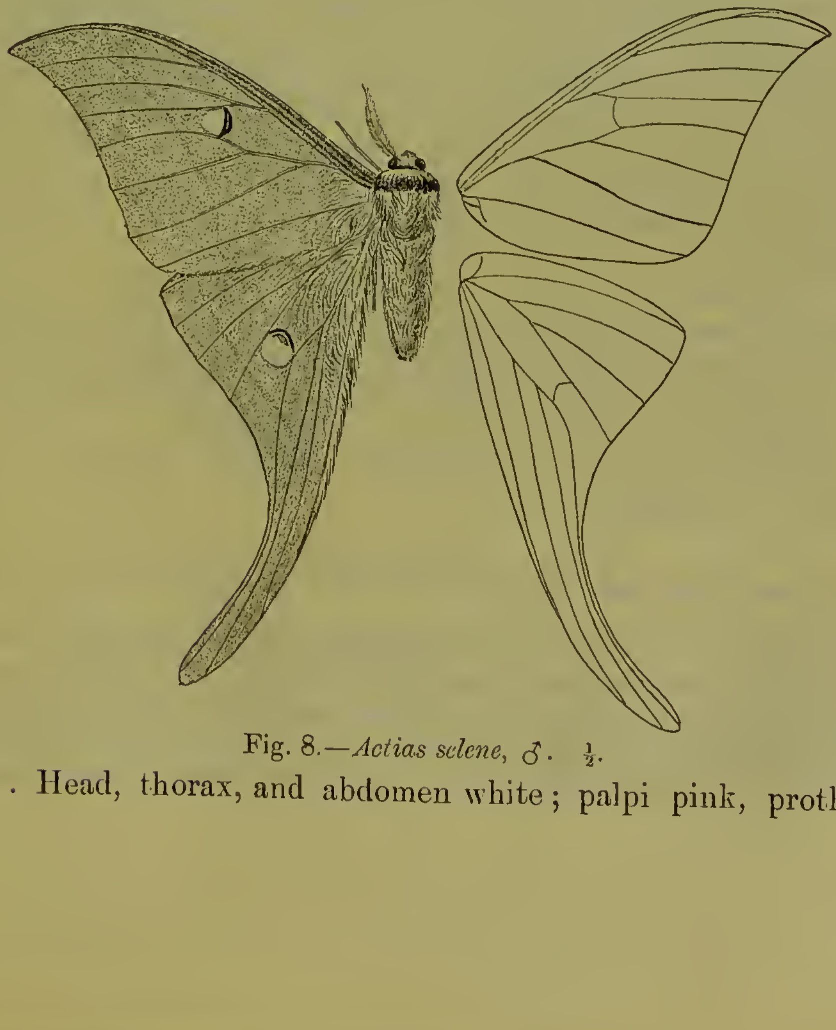

Fig. 8.—*Actias selene*, ♂. ½.

♂. Head, thorax, and abdomen white; palpi pink, prothorax

with a dark pink band; legs pink. Fore wing very pale green, white at base; a dark pink costal fascia, darkest along subcostal nervure; an outwardly-oblique pale yellow antemedial line; two inwardly-oblique slightly curved submarginal lines; a pale yellow marginal band; a dark red-brown lunule at end of cell, with a grey line on it, bounding inwardly a round ochreous spot with pinkish centre. Hind wing similar to the fore wing; the central portion of the tail pinkish.

♀. The outer margin less excised and waved; the yellow markings less developed; the antemedial line of fore wing nearer the base, and that on hind wing absent; the tail less pink.

Larva apple-green; paired dorsal and lateral yellow spinous tubercles on each somite except the last; dorsal yellow hairs; lateral and ventral black hairs; the pad to anal claspers rufous.

Cocoon pale brown and oval.

Hab. China; throughout India, Ceylon, and Burma. *Exp.*, ♂ 132–166, ♀ 140–182 millim.

2. **Actias mænas**, *Doubl. A. M. N. H.* xix, 1847, p. 95, pl. 7, fig. 1; *C. & S.* no. 1533.
Saturnia leto, *Doubl. Proc. Ent. Soc.* 1847, p. li, pl. 15; *C. & S.* no. 1532.

♂. Differs from *selene* in being pale yellow; the collar pink; the thorax and abdomen blotched with pink above. Fore wing pink at base; a broad pinkish antemedial band with waved edges enclosing a yellow spot below the subcostal nervure; the lunule and ochreous mark in the form of a crescent from the costal band to the lower angle of cell, the lunule being reversed and pointing inwards; two waved pinkish postmedial diffused lines, the outer line double, with a costal streak from it to the apex; the lower half of the outer area pinkish; no marginal pink line. Hind wing with the antemedial band narrower than on fore wing; a waved postmedial line; the tail longer, broader, and all pink except the spatulate end.

♀. Without the pink blotches on thorax and abdomen; wings without the broad pink markings; fore wing with a nearly erect antemedial line; a waved postmedial line which may be obsolescent; both wings with a marginal pink line; tail broad and only pink at middle.

Hab. Sikhim; Bhutan; Khási Hills; Sibságar; Burma. *Exp.*, ♂ 158, ♀ 172 millim.

3. **Actias ignescens**, *Moore, P. Z. S.* 1877, p. 602; *C. & S.* no. 1531.

♂. Differs from *mænas* in the basal pink patch of the fore wing joining the postmedial band, the pink covering the whole of the fore wing except a patch near the base, one before the lunule, one on the costa above it, one below the apex, and a spot between veins 2 and 3. Hind wing with the pinkish subbasal band broader

than in *mænas*, with its outer edge more irregular; the whole tail pinkish, except the tip.

Hab. Andamans. *Exp.* 164 millim.

Genus **ATTACUS.**

Attacus, *Linn. Syst. Nat.* i, pt. 2, p. 808 (1766).

Type, *A. atlas*, Linn.

Range. Mexico; S. America; Africa; Japan; China; throughout India, Ceylon, and Burma; Malacca; Java.

Fore wing with the apex produced and rounded; the outer margin excised. Hind wing rounded. Cell of both wings open.

4. **Attacus atlas**, *Linn. Syst. Nat.* i, pt. 2, p. 808; *C. & S.* no. 1535; *Cram. Pap. Exot.* iv, pl. 381, fig. C; *Moore, Cat. E. I. C.* pl. xx, figs. 2, 2 *a* (larva).
Saturnia silhetica, *Helfer, J. A. S. B.* vi, p. 41; *C. & S.* no. 1542.
Attacus taprobanis, *Moore, Lep. Ceyl.* ii, p. 124, pl. 127, figs. 1, 1 *a*; *C. & S.* no. 1543.

Head, thorax, and abdomen red-brown; the basal segment and abdomen pale, and each segment with a pale fringe; legs brown. Fore wing with the costa brown; the basal area brown and red-brown edged by red, pale, and black lines, curved from the costa

Fig. 9.—*Attacus atlas*, ♂. $\frac{1}{3}$.

to vein 2, then oblique to near base of inner margin; medial area red-brown; a large triangular hyaline spot at end of cell with a black edge; one or two hyaline streaks above it touching the post-medial line, which is black, pale, and red, and curved inwards from the subcostal to vein 2, then outwards to inner margin; outer

area shading from pink through purplish fuscous to tawny brown; apical area yellow shading to pink; the membrane below the costa crimped and suffused outwardly with blue-grey and ending in a black spot; a dark red streak below vein 8; a yellow-brown marginal band with a highly waved black line on it. Hind wing similar to fore wing; the antemedial line nearly straight; no streak above the hyaline triangular mark; the postmedial line angled towards inner margin but not curved; apical area not variegated; a series of black spots within the black submarginal line which is less waved.

Some specimens are considerably darker than others; the form *taprobanis* from Ceylon has the hyaline spots small and narrow; the hyaline streak of the fore wing absent.

Larva pale green with brownish speckles; 1st, 2nd, and 3rd somites with dorsal prominences; 4th to 11th somites with long fleshy dorsal and subdorsal blue-green spines projecting backwards; a series of lateral blue-black spines on 1st to 5th somites; a similar subdorsal series from 1st to 11th somites, both these series projecting forwards; an oval red ring on anal somite above the claspers.

Cocoon pale greyish brown and pyriform.

Hab. Throughout India, Ceylon, and Burma; Java. *Exp.*, ♂ 224, ♀ 250 millim.

5. **Attacus edwardsi**, *White, P. Z. S.* 1859, p. 115, pl. 57; *C. & S.* no. 1538.

Differs from *atlas* in the legs being fringed with white; the thorax and abdomen darker; the first segment of abdomen white; paired dorsal white segmental streaks from the third segment to extremity, which is white; two lateral and two ventral white lines. Fore wing much darker, the antemedial line inwardly black, outwardly white; the triangular hyaline spot edged with yellow-brown, and not touching the postmedial line; no hyaline streak; the postmedial line white and broader; the subapical streak black and short; a prominent waved white line between it and the black spot at end of the crimped membrane; the marginal band yellow within the waved black line, which is broader. Hind wing with similar differences from *atlas*; the black spots on the marginal band much larger.

Hab. Sikhim; Shillong. *Exp.* 250 millim.

6. **Attacus cynthia**, *Drury, Exot. Ins.* ii, pl. 6, fig. 2; *C. & S.* no. 1537; *Moore, Lep. E. I. Co.* pl. 20, figs. 3, 3 *a*.
Attacus vesta, *Wlk. Cat.* xxxii, p. 525; *C. & S.* no. 1544.
Attacus canningii, *Wlk. Cat.* xxxii, p. 525; *C. & S.* no. 1536.
Attacus walkeri, *Feld. Wien. ent. Mon.* vi, p. 34.
Attacus pryeri, *Butl. Ill. Het.* iii, p. 11, pl. 43, fig. 5.

Head, thorax, and abdomen pale brown; collar and metathorax fringed with white; abdomen with the 1st segment white; a

dorsal white line with segmental white tufts on each side of it; a series of lateral white tufts; paired sublateral and ventral white lines. Wings pale yellowish brown. Fore wing with a white antemedial line, outwardly oblique from the costa to vein 2, then bent back to the base of inner margin; a narrow hyaline lunule on the discocellulars, inwardly edged with fuscous, outwardly with yellow; a postmedial fuscous, white, pink, and pinkish-white band, generally curved and angled at the lunule, sometimes nearly straight; outer area irrorated with fuscous; apical area suffused with pink; a white and dark ocellated mark near the margin between veins 7 and 8, with a waved white line from it to the costa: outer margin pale brown; a dark submarginal line dentated between veins 6 and 7. Hind wing similar, the antemedial line oblique and not angled; some fuscous streaks on the marginal band inside the line.

Typical *cynthia* from Java is the palest form, with the pinkish-white suffusion beyond the postmedial band of both wings, which is nearly straight, diffused along the veins; *walkeri=canningii=vesta* from China and India is darker fulvous, with the postmedial band curved and the suffusion beyond more restricted; while *pryeri* from Japan is again considerably darker. This is the "Arrundi" or "Eria" Moth of silk-culture.

Larva pale green or whitish, with one dorsal and two lateral pairs of darker spines.

Cocoon pale brown.

Hab. Japan; China; Himalayas; Assam; Cachar; Java; and ? Nilgiris. *Exp.*, ♂ 136, ♀ 144 millim.

7. **Attacus ricini**, *Boisd. Ann. Soc. Ent. Fr.* 1854, p. 755; *C. & S.* no. 1541; *Moore, Wardle's Wild Silks*, pl. 8, figs. 1, 2.
Attacus lunula, *Wlk. Cat.* v, p. 1221.
Attacus guerini, *Moore, P. Z. S.* 1859, p. 269; *C. & S.* no. 1539.
Attacus obscurus, *Butl. Trans. Ent. Soc.* 1879, p. 5; *C. & S.* no. 1540.
Saturnia iole, *Westw. P. Z. S.* 1881, p. 144; *C. & S.* no. 1548.

Differs from *cynthia* in the abdomen having segmental bands of white hair above instead of tufts; the colour usually darker. Fore wing with the antemedial line more angled and generally joining the postmedial band; the lunule much shorter; the postmedial band of both wings with fuscous replacing the pink.

The palest form is *ricini*; *obscurus* from Cachar is a large dark form; *guerini* a small dark form; *iole* a sport with the markings faded, the postmedial band of both wings whitish, broad and diffused.

Hab. China; Sikhim; Assam; ? Ceylon *Exp.*, ♂ 100–108, ♀ 116 millim.

Genus ANTHERÆA.

Antheræa, *Hübn. Verz.* p. 152 (1818).

Type, *A. paphia*, Linn.

Range. Africa; Japan; China; Philippines; throughout India, Ceylon, and Burma; Andamans; Java.

Fore wing with the costa incurved near base, excurved towards apex, which is rounded; outer margin highly excised. Hind wing rounded; cell of both wings closed.

8. **Antheræa roylei,** *Moore, P. Z. S.* 1859, p. 256, pl. 64, fig. 1; *C. & S.* no. 1567.

♂. Antennæ, head, thorax, and abdomen pale brown; collar, prothorax, and basal half of costa of fore wing pinkish brown, powdered with grey. Fore wing pale greenish brown; a pale and red subbasal line from median nervure to inner margin; a similar line across the middle of cell; an almost obsolete postmedial line, on which is placed a round hyaline spot on the discocellulars surrounded by an ocellus, which is greenish with a white and pink lunule on the inner side, and a yellow and black lunule on the outer; a pink and pale submarginal line expanding into a grey patch at apex; a slight yellow marginal line. Hind wing similar to the fore wing, except that there is a single antemedial angulated line; the submarginal line further from the base, and not reaching the costa.

♀ usually with a more ochreous tinge.

Larva: head pinkish brown with dark dots; somites bright apple-green; 1st somite with a blue lateral spot; 2nd to 11th with paired dorsal humps crowned with spinous tubercles; 2nd and 3rd somites with the apical tubercle greenish yellow and three lateral blue spots; a lateral yellow band from 4th somite expanding on anal somite; 4th and 5th somites with the apical tubercle silver, and a silver spot on band; 6th to 10th somites with the apical tubercles blue; 6th and 7th with a silver spot on band; 8th, 9th, and 10th with a blue spot on band. Food-plant "Muhowah," "oak," and "birch."

Cocoon double-walled and thin.

Hab. Mussoorie; Sikhim; Kangra; Khási Hills. *Exp.*, ♂ 124–160, ♀ 190 millim.

9. **Antheræa paphia,** *Linn. Syst. Nat.* i, p. 809.
   Antheræa mylitta, *Drury, Exot. Ins.* ii, pl. 5, fig. 1; *C. & S.* no. 1564.
   Antheræa sivalica, *Moore, Wardle's Wild Silks*, p. 7; *C. & S.* no. 1557.
   Antheræa cingalesa, *Moore, Lep. Ceyl.* ii, p. 122, pl. 125, figs. 1, 1*a*, *b* (larva); *C. & S.* no. 1560.
   Antheræa nebulosa, *Hutton, Moore, Wardle's Wild Silks*, p. 5.
   Antheræa fraterna, *Moore, P. Z. S.* 1888, p. 402; *C. & S.* no. 1560 A.
   Antheræa pulchra, fasciata, olivescens, ochripicta, and versicolor, *Moore, A. M. N. H.* (6) ix, pp. 448–450.

♂. Differs from *roylei* in the colour being reddish or yellowish; the costal brown and grey fascia of fore wing reaching the apex; the hyaline and ocellated spots much larger, the inner lunule and

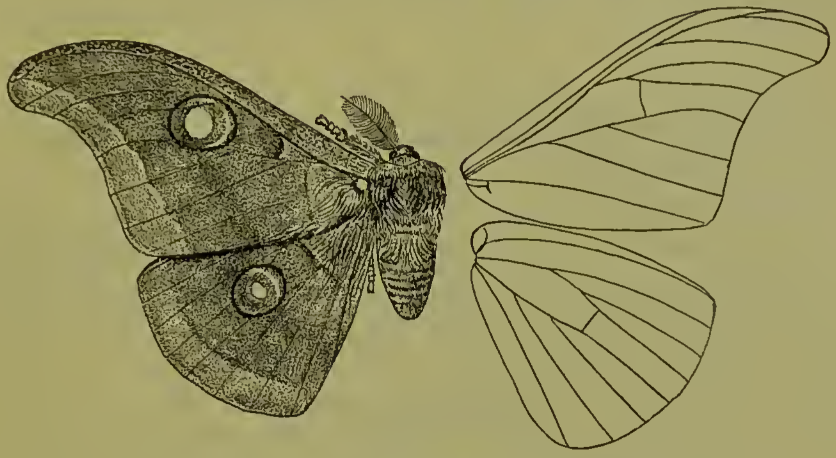

Fig. 10.—*Antheræa paphia*, ♂. ½.

postmedial line bright pink; the submarginal line of the hind wing much nearer the margin; no marginal yellow line.

♀. Either pinkish brown or bright yellowish fawn; the hyaline and ocellated spots usually larger than in the male.

The form *mylitta* is the most yellow; *paphia* is pale brownish yellow; *nebulosa* greenish brown, clouded with fuscous as far as the postmedial line; while *cingalesa*, from Ceylon, is a dark brownish-yellow form.

This is the "Tussur Moth" of the silk-industry.

Larva green, with paired dorsal series of yellow humps; lateral purple-bordered white lunulate spots on 5th and 6th somites; a lateral yellow line from 7th somite ending in a dilated brown band on anal somite; spiracles yellow.

Cocoon brownish grey, hard, oval, and attached by a silken peduncle.

Hab. China; throughout India and Ceylon. *Exp.*, ♂ 140–174, ♀ 150–190 millim.

10. **Antheræa knyvetti**, n. sp.

Reddish or olive yellow in colour, as in *paphia*; the costal fascia of fore wing only extending along two-thirds of the costa; the ocelli small, each hyaline spot usually with a dark lunule on its inner edge; the marginal line yellow; the submarginal line of hind wing further from the margin, as in *roylei*.

Differs from *roylei* in its reddish-yellow colour, in the antemedial line of the hind wing being generally further from the base and touching the ocellus.

Larva differs from *roylei* in having sepia streaks on the head; two silver spots only on the lateral band on 4th and 5th somites;

the apical tubercles on 2nd and 3rd somites blue instead of green. Food-plant "wild cherry" and "birch."

Cocoon small, hard, dark, and pedunculated.

Hab. Sikhim (*Knyvett*). *Exp.* 156 millim. Types in colls. Knyvett and Elwes.

11. **Antheræa helferi,** *Moore, P. Z. S.* 1859, p. 257, pl. 64, fig. 2; *C. & S.* no. 1562.

♂. Differs from *knyvetti* in there being a black blotch on the upperside of the ocellus of the hind wing, continued as a line round the outer edge; a conspicuous waved dark postmedial line which is curved inwards round the ocellus, and joins the antemedial line below the costa; the hyaline centres of the ocelli are almost or quite absent on both wings; the colour varies from pinkish to ochreous. Underside with the antemedial line straight.

♀. Yellowish, with the postmedial line of the hind wing but slightly waved.

Hab. Sikhim. *Exp.* 150 millim.

12. **Antheræa assama,** *Westw. Cab. Or. Ent.* p. 41, pl. 20, fig. 2; *C. & S.* no. 1559.

? Saturnia perotteti, *Guér. Mag. Zool.* 1843, pl. 123; *C. & S.* no. 1566.

Antheræa mesankooria, *Moore, Wardle's Wild Silks,* p. 5; *C. & S.* no. 1563.

♂. Differs from *helferi* in the colour being ochreous brown to dark chestnut-brown; the ocellus of the fore wing entirely yellow-brown. Hind wing, with the inner part of the ocellus dark, the outer part yellow-brown; the postmedial line not waved nor so much curved, nor joining the antemedial line.

♀. The submarginal line of both wings grey.

This is the "Muga" of silk-culture.

Larva bright yellow or dark green, with a brown and yellow streak at the sides; the spiracles black; dorsal spinous tubercles red; head and legs brown; claspers green, the anal pair with a black lateral ring.

The form *perotteti*, from Pondicherry, as figured by Guérin, differs in having the two submarginal lines of each wing waved.

Cocoon brown and non-pedunculate.

Hab. Himalayas from Kangra to Assam, Pondicherry. *Exp.* 150–170 millim.

13. **Antheræa andamana,** *Moore, P. Z. S.* 1877, p. 602; *C. & S.* no. 1558.

♀. Colour as in *roylei*. Fore wing with the dark postmedial line prominent; the submarginal line dark, with a waved line

before it. Hind wing with three waved lines, one at the ocellus, two postmedial.

Hab. Andamans. *Exp.* 186 millim.

14. **Antheræa frithi,** *Moore, P. Z. S.* 1859, p. 256, pl. 65, fig. 1; *C. & S.* no. 1561.

♂. Differs from all the preceding species in being brown or pink suffused with yellow; a yellow patch in cell of fore wing, and a larger patch on costa before apex; two postmedial highly lunulate lines; the ocelli as in *paphia.* Underside with the antemedial line waved.

♀. Brownish.

Hab. Sikhim; Bhutan. *Exp.*, ♂ 134–150, ♀ 170 millim.

Genus SATURNIA.

Saturnia, *Schrank, Faun. Boica,* ii, pt. 2, p. 149 (1802).
Pavonia, *Hübn. Verz.* p. 157 (1818).
Rinaca, *Wlk. Cat.* vi, p. 1274 (1855).
Caligula, *Moore, P. Z. S.* 1867, p. 684 (non descr.).
Neoris, *Moore, Trans. Ent. Soc.* (3) i, p. 321 (1862–64).

Type, *S. pini,* Schr., from Europe.

Range. Africa; Palæarctic region; Himalayas; Assam.

Fore wing with the costa evenly arched; the apex rounded; the outer margin but slightly excised. Hind wing rounded. Tarsi naked.

Sect. I. Palpi of moderate size; branches of antennæ in ♂ long.

15. **Saturnia zuleika,** *Hope, Trans. Linn. Soc.* xix, 1848, p. 132, pl. xi, fig. 5; *C. & S.* no. 1574.

♂. Head and thorax dark red-brown; collar white; metathorax fringed with white; abdomen brown and grey, with a series of lateral crimson spots and two paired series of black ventral streaks. Fore wing grey, irrorated with brown scales, and suffused with pink towards the apex; marginal area olive-brown; a dark brown patch at base of inner margin, followed by a deep crimson band from median nervure to inner margin, with a dark brown outer edge continued upwards across the cell; a narrow hyaline streak at end of cell surrounded by pinkish, grey, and crimson lines; three highly dentate postmedial lines bent inwards below the ocellus at vein 2; a black triangular patch on the costa before the apex, which is pale buff; two submarginal waved black lines. Hind wing similar, without the dark patch and crimson band at base; an antemedial curved line; the ocellus broader; the disk more suffused with pink; the postmedial lines waved and not bent inwards.

In Nága specimens the ocelli of both wings are more rounded.
Hab. Sikhim; Nága Hills. *Exp.* 136 millim.

Fig. 11.—*Saturnia zuleika*, ♂. ⅔.

16. **Saturnia thibeta,** *Westw. P. Z. S.* 1853, p. 166; *C. & S.* no. 1572.
Rinaca extensa, *Butl. Ill. Het.* v, p. 61, pl. 94, fig. 2; *C. & S.* no. 1573.

Differs from *zuleika* in being nearly uniform ochreous, varied slightly with grey and brown; the ocellus rounder, with a narrow fawn ring.

Hab. Tibet; Sikhim, 7000 feet; Assam. *Exp.* 124–146 millim.

17. **Saturnia anna,** *Moore, P. Z. S.* 1865, p. 818; *C. & S.* no. 1545.

Head, thorax, and abdomen brown; collar yellow. Fore wing pale yellow, irrorated with black scales; an indistinct basal black patch and antemedial line; the ocellus large and round, red-brown ringed with black, and containing a white lunule and black centre with a white streak on it; the apical patch reddish brown; a submarginal brown line with two series of yellow spots beyond it. Hind wing with the disk slightly suffused with pink; the ocellus as on fore wing except that the outer ring is red-brown with crimson inside it; three postmedial highly dentate lines on both wings.

Hab. Sikhim. *Exp.* 110–120 millim.

Sect. II. Palpi minute; branches of antennæ in ♂ short.

18. **Saturnia grotei,** *Moore, P. Z. S.* 1859, p. 265, pl. 65, fig. 2; *C. & S.* no. 1547.

Differs from *anna* in the ground-colour of the wings being brown. Fore wing with the white lunule on the ocellus smaller, and no white streak on the black centre; the submarginal line

ferruginous, no yellow spots. Hind wing with the disk much suffused with crimson; the inner part of the ocellus crimson; two postmedial waved lines.

Hab. Himalayas, from Simla to Sikhim; Tibet. *Exp.*, ♂ 80, ♀ 88 millim.

19. **Saturnia lindia,** *Moore, Trans. Ent. Soc.* 3rd ser. ii, p. 424, pl. 22, fig. 3; *C. & S.* no. 1549.
Saturnia hockingii, *Moore, P. Z. S.* 1888, p. 402; *Butl. Ill. Het.* vii, pl. 124, figs. 2, 3; *C. & S.* no. 1546 A.

♂. Differs from *anna* in the collar and ground-colour being grey. Fore wing: the ocellus with no crimson; the postmedial lines waved, not highly dentate, no yellow spots. Hind wing: the ocellus with crimson only on inner side; two waved postmedial lines.

Hab. Kulu. *Exp.* 86 millim.

20. **Saturnia pyretorum,** *Westw. Cab. Or. Ent.* p. 49, pl. 24, fig. 2; *C. & S.* no. 1550.
Saturnia cidosa, *Moore, Trans. Ent. Soc.* (3) ii, p. 423; *C. & S.* no. 1546.

♂. Differs from *lindia* in the base of the fore wing being mostly dark; the medial area whitish; the postmedial area heavily suffused with fuscous so as almost entirely to obliterate the dentate lines; a white submarginal line; outer margin fuscous; ocellus dark, with a white streak and ringed with yellow and black; two deep red subapical patches. Hind wing similar; the whitish medial area very broad; the waved lines entirely obsolete; an obsolescent red subapical patch.

♀. With a large tuft of hair at end of abdomen.

S. boisduvali, Ersch., from Irkutsk, appears only to differ in having a straighter postmedial line to fore wing.

Hab. China; Sikhim. *Exp.* 103 millim.

21. **Saturnia simla,** *Westw. Cab. Or. Ent.* p. 41, pl. 20, fig. 1; *C. & S.* no. 1571.

Head and thorax pale chestnut; collar grey; metathorax fringed with grey; abdomen with the first segment chestnut, the others greyish brown. Fore wing: costa grey; basal area chestnut, with a dark red line on its outer edge, angled at median nervure, but sometimes almost straight; an oblique chestnut line from the costa before apex nearly meeting the red line on inner margin, the space between the two lines pinkish grey; the area outside the oblique line chestnut; margin brown; an ocellus consisting of a hyaline streak on a dark brown ground surrounded by pale brown, edged inwardly by black, white, and red, outwardly by black; a black mark before the apex, which is pinkish grey; two dentate obsolescent postmedial lines. Hind wing brownish; the upper discal

area pink; an antemedial curved red-brown line; ocellus as on fore wing, but larger and better defined; two waved postmedial red-brown lines; outer area bright chestnut; margin brown. Some specimens are browner than others, especially those from Sikhim.

Cocoon dark and fenestrated.

Hab. N.W. Himalayas. *Exp.* 120–158 millim.

22. **Saturnia huttoni**, *Moore, Trans. Ent. Soc.* (3) i, p. 321; *C. & S.* no. 1551.

♀. Differs from *simla* in the antemedial line of the fore wing being waved; the space between that and the postmedial line darker; the ocellus large, but only the lunulate inner part prominent. Hind wing with the antemedial line straight; the ocellus with the black ring narrow; the postmedial lines less waved, the outer one prominent.

Hab. N.W. Himalayas. *Exp.* 110 millim.

23. **Saturnia cachara**, *Moore, P. Z. S.* 1872, p. 578; *C. & S.* no. 1570.

♂. Differs from *simla* in being without the red tinge. Fore wing without the basal brown patch; the hyaline spot surrounded by a circular flesh-coloured ocellus, inwardly edged by pink, outwardly by black; the waved lines dark. Hind wing with the red and black margins to the ocellus broad; the waved postmedial lines dark; the submarginal pale line waved.

Hab. Cachar. *Exp.* 106 millim.

SECT. III. The branches of antennæ in ♀ much longer; palpi moderate.

24. **Saturnia stoliczkana**, *Feld. Reis. Nov.* pl. 87, fig. 3; *C. & S.* no. 1553.

Neoris shadulla, *Moore, P. Z. S.* 1872, p. 577; *C. & S.* no. 1552.

♀. Head, thorax, and abdomen pale red, the collar white; metathorax fringed with white. Wings with the ground-colour grey. Fore wing with the costa grey; a brick-red basal patch; a dark antemedial line slightly angled at the median nervure; a hyaline lunule bordered inwardly with yellow, black, and white, pink and black outwardly with two waved postmedial diffused lines, beyond which the colour is pale; marginal area pale red. Hind wing similar to fore wing; the white ring extending all round the ocellus.

The Cis-Himalayan form has the ground-colour of the wings pinkish grey.

Hab. N.W. Himalayas; Yárkand; Ladák, 12,000 feet. *Exp.* 16–132 millim.

Genus LOEPA.

Loepa, *Moore, Lep. E. I. C.* ii, p. 399 (1858).
Rhodia, *Moore, P. Z. S.* 1872, p. 578.

Type, *L. katinka*, Westw.
Range. Japan; Himalayas; Assam; Yunnan; Java.
Shape and neuration as in *Saturnia*. Tarsi thickly clothed with hair.

25. **Loepa katinka,** *Westw. Cab. Or. Ent.* p. 25, pl. 12, fig. 2; *C. & S.* no. 1554.
Loepa miranda, *Moore, Trans. Ent. Soc.* (3) ii, p. 424; *C. & S.* no. 1555.
Loepa sikkima, *Moore, P. Z. S.* 1865, p. 818; *C. & S.* no. 1556.

Bright chrome-yellow. Fore wing with the costa grey, suffused with fuscous; a subbasal more or less angled pink line; a large rounded or oval ocellus at end of cell, which is pinkish brown,

Fig. 12.—*Loepa katinka*, ♂. 1/1.

containing white and black lunulate marks; a highly waved post-medial dark line; double submarginal lines, the inner line pinkish and angled below the costa, the outer grey and terminating in a black spot between veins 7 and 8, above which is a pinkish patch on the costa, edged exteriorly with white and pink; a series of almost marginal pale lunules. Hind wing differs from the fore wing in the first line being further from the base, narrow, and dark; the subcostal patch and spot absent. Underside with a pink and white apical patch to hind wing developed in *sikkima* and the Javan form.

The form *miranda* is large and pale, with the ocellus small, round, and almost blind; *katinka* is a similar but small form; while *sikkima* is small and dark, much suffused with fuscous

towards the apex of fore wing, in the male the ocellus large and round or elongate, with a prominent pupil. The branches of the antennæ vary much in length.

Larva brown and hairy, with six pink tubercles on each somite; white sublateral irregular blotches from 4th to 10th somites; claspers pink.

Hab. Himalayas; Assam; Yunnan; Java. *Exp.* 90–124 millim.

*26. **Loepa? simplicia**, *Maass. & Weym. Beitr. zur Schmett.* pt. ii, fig. 20; *C. & S.* no 1568.

♂. Yellow. Fore wing with a pink and white antemedial line from the subcostal to the inner margin, bent at the median nervure: an ocellus at end of cell, with white centre ringed with yellow, black, and pink; a subapical pink patch, with dark specks on it, and a straight brown submarginal line from it. Hind wing with the antemedial line angled near inner margin; the ocellus larger than on fore wing; the brown line postmedial, slightly bent and waved, and arising below the costa.

Hab. E. Indies. *Exp.* 160 millim.

27. **Loepa newara**, *Moore, P. Z. S.* 1872, p. 578; *C. & S.* no. 1575.

Head, thorax, and abdomen bright yellow; collar grey; patagia bordered by reddish lines. Fore wing yellow, irrorated with grey, fuscous, and pink scales, except at centre of inner margin and outer area; some pink hairs at base; a grey and fuscous antemedial line, angled at median nervure; a large subtriangular hyaline spot at end of cell; a dark postmedial slightly curved and oblique line; a sickle-shaped white subapical mark, with a black spot above it and a pink streak below it, from which runs a highly waved submarginal line; a marginal olive band. Hind wing yellow; a pink and dark antemedial line; a hyaline spot at end of cell edged with fuscous; a postmedial line, beyond which the area is suffused with pink and fuscous, with a waved outer edge.

Cocoon pale blue-green, and suspended by a silken peduncle.

Hab. Nepal; Sikhim. *Exp.*, ♂ 150, ♀ 142–150 millim.

Genus SALASSA.

Salassa, *Moore, P. Z. S.* 1859, p. 246.

Type, *S. lola*, Westw.

Range. Sikhim; Sylhet.

Fore wing with the apex acute; outer margin nearly evenly curved. Hind wing and neuration as in *Saturnia*. Tarsi naked.

28. **Salassa lola**, *Westw. Cab. Or. Ent.* p. 25, pl. 12, fig. 3; *C. & S.* no. 1569.

♂. Head, thorax, and abdomen brick-red. Fore wing brick-red; an antemedial pale and darker curved line; a hyaline spot beyond the cell very variable in shape and size; a postmedial dark line, with a series of hyaline striæ on it; a submarginal dark band, with its inner and outer edges waved; a grey apical patch. Hind wing similar to fore wing, the ante- and postmedial lines broader; a hyaline spot beyond the cell surrounded by an ocellus, which is

Fig. 13.—*Salassa lola*, ♂. 1/1.

ringed black, white, and deep red exteriorly; the hyaline striæ obsolete beyond the ocellus. Underside: the basal two-thirds of wings red-brown suffused with grey, except exteriorly; a broad grey submarginal band, with waved outer edge; marginal area brown. Tibiæ and tarsi grizzled.

One specimen taken in March much paler.

♀. Brown with dark and reddish hairs..

Hab. Sikhim; Sylhet. *Exp.*, ♂ 116, ♀ 120–158 millim.

29. **Salassa royi**, *Elwes, P. Z. S.* 1887, p. 447; *id. Trans. Ent. Soc.* 1888, pl. viii, fig. 2; *C. & S.* no. 1550 A.

♂. Differs from *lola* in the colour being very dark purplish red-brown; the hyaline spot large and round; no hyaline striæ on the postmedial line. Hind wing with the outer ring of the ocellus narrow and black, instead of broad and deep red. Underside with the grey suffusion extending to the postmedial line.

♀. Paler; the head and prothorax yellow; the wings clothed with olive-yellow hair; the outer part of the postmedial line greyer.

Hab. Sikhim. *Exp.*, ♂ 140, ♀ 154 millim.

Genus CRICULA.

Cricula, *Wlk. Cat.* v, p. 1186 (1855).
Euphranor, *Her.-Schäff. Samml. aus. Eur. Schmet.* p. 61 (1858).

Type, *C. trifenestrata*, Helf.

Range. Throughout India, Ceylon, and Burma; Java.

Fore wing with the costa evenly arched; apex rather acute; outer margin highly excised; veins 5 and 6 given off from the subcostal much nearer the base. Hind wing rounded; veins 5 and 6 given off from the subcostal towards the base.

30. **Cricula trifenestrata**, *Helfer, J. A. S. B.* vi, p. 45; *Her.-Schäff. Samml. aus. Eur. Schmet.* pl. 17, fig. 80; *C. & S.* no. 1354; *Moore, Lep. E. I. Co.* pl. xviii, fig. 7 *a*, *b* (larva and cocoon).
Cricula burmana, *Swinh. Trans. Ent. Soc.* 1890, p. 198.

♂. Brown, ochreous, yellowish, or reddish. Fore wing with a waved antemedial dark line; a small hyaline spot beyond the end of the cell, with one or two others above it, the upper one generally

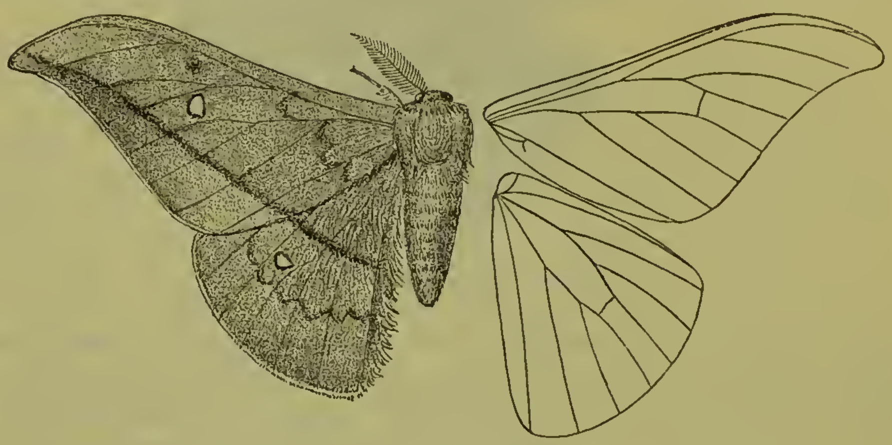

Fig. 14.—*Cricula trifenestrata*, ♂. 1/1.

represented by a dark spot; an oblique line from the apex to the inner margin beyond the middle, the area beyond it suffused with grey. Hind wing with the oblique line continued to the inner margin before the middle; a hyaline spot beyond the cell; a submarginal waved line. Underside with the basal area suffused with purple.

♀. Generally redder; three large irregularly shaped hyaline spots beyond the cell of the fore wing, often with one or two small ones inside them.

Larva black-brown; 2nd to 11th somites each with six setiferous tubercles; 1st somite and anal claspers crimson; a pale reddish sublateral stripe; legs and prolegs brown.

Cocoon composed of bright golden-yellow silk firmly united into a network; a race from the Karen Hills spins a solid cocoon.

Hab. Throughout India, Ceylon, and Burma; Andamans; Java. *Exp.*, ♂ 62–82, ♀ 72–92 millim.

31. **Cricula drepanoides**, *Moore, P. Z. S.* 1865, p. 817; *C. & S.* no. 1353.

♂. Differs from *trifenestrata* in the head, thorax, and abdomen being suffused with purplish grey. Fore wing purplish grey, the outer area ochreous; an antemedial irregular line; a large number of hyaline specks and blotches, more or less conjoined in, beyond, and below the end of the cell; the oblique line is bent back to the costa, which it reaches some way before the apex; an oblique streak from the apex meeting the oblique line and then continued as a waved submarginal line. Hind wing reddish ochreous; an antemedial line; a hyaline spot at end of cell surrounded by five small ones; postmedial and submarginal waved lines.

Hab. Sikhim. *Exp.* 68 millim.

The following species formerly recorded as Indian are omitted.

Antheræa pernyi, Guér., C. & S. no. 1564 (part.), is a Chinese non-pedunculate species.

Attacus fenestra, Linn., C. & S. no. 1354 (part.), is *Hylurga fenestra* from Venezuela.

Attacus perspicua, Linn., C. & S. no. 1354 (part.), is *Turckheimia perspicua* from W. Africa.

Bombyx irius and *saturnus*, Fabr., from "India," Syst. Ent. iii, i, p. 409, appear to be African species, but the descriptions are too vague for recognition.

Family BRAHMÆIDÆ.

Proboscis present; palpi large, rounded, and upturned. Antennæ bipectinated in both sexes; mid tibia with a single pair of spurs; hind tibia with two pairs. Frenulum absent. Fore wing with vein 1 *b* forked at the base; 1 *c* absent; 5 from near the upper angle of cell. Hind wing with two internal veins; the cell short, with a veinlet in it; vein 5 from near the upper angle; 6 and 7 given off near the base; 8 free from the root and nearly touching 7 beyond the cell; a precostal vein.

Genus **BRAHMÆA**.

Brahmæa, *Wlk. Cat.* vi, p. 1315 (1855).

Type *B. certhia*, Fabr., from China.

Range. E. and W. Africa; Palæarctic Asia; Himalayas; Burma.

Palpi large, rounded, and upturned; antennæ bipectinated in both sexes, the branches short and nearly even throughout. Fore wing with veins 6, 7, 8, 9, 10 stalked together; 7 and 8 being given off on a short stalk. Hind wing with the cell very short and with a veinlet in it; the upper discocellular given off from vein 6.

Larva. The 2nd and 3rd somites swollen and armed with a pair of forwardly projecting lateral spines, which turn into warts at the last moult.

Pupa naked.

32. **Brahmæa wallichii,** *Gray, Zool. Misc.* p. 39; *C. & S.* no. 1579.
Brahmæa conchifera, *Butl. A. M. N. H.* (5) v, 1880, p. 188; *Ill. Het.* v, pl. 95, figs. 3, 4; *C. & S.* no. 1577.
Bombya spectabilis, *Hope, Trans. Linn. Soc.* xviii, p. 443.
Brahmæa rufescens, *Butl. A. M. N. H.* (5) vi, 1880, p. 62; *C. & S.* no. 1578.

♂. Head black; antennæ brown, with a brown band between their bases; thorax brown, with three pairs of black lines; collar with a pair of black spots; abdomen brown, with paired square

Fig. 15.—*Brahmæa wallichii*, ♂. ½.

segmental black spots: underside of head and thorax black; of abdomen brown, with black lines. Fore wing pale olive-brown; seven waved black lines before the middle; two black medial lines enclosing an irregular space below the costa, then approaching each other at vein 2, and enclosing a round space above inner margin; in these spaces the veins are marked with white and black; eight black lunulate lines on the outer area between vein 5 and the inner margin, some of them in the form of "brackets," the outer series forming ring-marks; apical area with veins 6, 7, 8 marked with white lunules; a black subapical patch, with some fine black lunules from it to vein 6; a yellow streak above vein 5. Hind wing: the basal area deep black, with some brown streaks towards inner margin; outer area yellowish, shading to olive-brown; nine waved lines, expanding into blue-black marks on the veins, with white spots between them; a submarginal broken line. Underside

with the basal half of both wings black, more or less streaked with brown on costa of both wings and beyond cell and on inner margin of fore wing.

The form *conchifera* is slightly paler than typical *wallichii*.

The form *rufescens* has the whole basal area of the fore wing below pale.

Hab. Nepal; Sikhim; Khási Hills; Assam; Upper Burma. *Exp.* 150–170 millim.

33. **Brahmæa hearseyi**, *White, Proc. Ent. Soc.* 1861, p. 26.
Brahmæa whitei, *Butl. Ill. Het.* v, p. 62, pl. 95, figs. 1, 2; *C. & S.* n. 1580.

♂. Differs from *wallichii* in the abdominal markings of the upperside being narrow black and white bands; the ground-colour of both wings paler; the subapical white lunules are joined into waved white lines, one or two of those nearest the base having black lines inside them. Hind wing with pale streaks between the veins from inner margin to vein 6.

Hab. Mussooree; Sikhim; Burma. *Exp.* 116–170 millim.

The following species formerly recorded as Indian is omitted.

Brahmæa certhia, Fabr., C. & S. no. 1576, is from China.

Family BOMBYCIDÆ.

Proboscis absent; palpi rather small or absent; antennæ bipectinated in both sexes; legs hairy, without spurs. Frenulum absent; vein 5 of both wings from, or from above, the middle of the discocellulars; veins 7, 8, 9 of fore wing generally more or less bent downwards; vein 1 *a* forming or not forming a fork with 1 *b*; 1 *c*

Fig. 16.—Larva of *Ocinara signifera*. $\frac{1}{1}$. (From Hutton, Trans. Ent. Soc. 1864, pl. 19, fig. 6.)

absent or present. Hind wing with two or three internal veins; vein 8 arising from the base of 7, or free from the base with a bar between them; the inner margin irregular and in part turned over.

Larva elongate and not hairy; dorsal humps on some of the somites, or a horn on the terminal somite, or paired dorsal spines.

Cocoon formed of fine silk, of great commercial value in some species.

Key to the Genera.

a. Hind wing with vein 8 from the base of 7, and no bar between them.
  a'. Palpi present.
    a². Fore wing with veins 7, 8, 9 but slightly bent downwards.
      a³. Fore wing with veins 6 and 11 from the cell .... 1. BOMBYX, p. 32.
      b³. Fore wing with veins 6 and 11 stalked with 7, 8, 9, 10 .... 2. ECTROCTA, p. 33.
    b². Fore wing with veins 7, 8, 9 much bent downwards .... 3. OCINARA, p. 34.
  b'. Palpi absent.
    a². Fore wing with a veinlet in the cell; veins 7, 8, 9 much bent downwards .... 4. GUNDA, p. 36.
    b². Fore wing with no veinlet in the cell; veins 7, 8, 9 not much bent downwards. 5. THEOPHILA, p. 37.
b. Hind wing with vein 8 free from the root, and a bar between it and vein 7; fore wing with veins 7, 8, 9 not bent downwards.
  a'. Fore wing with vein 6 stalked with 7, 8, 9, 10 .... 6. MUSTILIA, p. 38.
  b'. Fore wing with vein 6 from the angle of cell. 7. ANDRACA, p. 40.

Genus BOMBYX.

Bombyx, *Hübn. Verz.* p. 190 (1818).

Type, *B. mori*, Linn.

Range. Japan; China; and introduced into India, Europe, &c.

Palpi slight. Fore wing with the outer margin excised below the apex and slightly angled; veins 6 and 11 from the cell; 7, 8, 9, 10 stalked together; 7, 8, 9 but slightly bent downwards. Hind wing with vein 5 from above the centre of the discocellulars; veins 6 and 7 on a short stalk; no bar between veins 7 and 8 near base.

34. **Bombyx mori**, *Linn. Syst. Nat.* i, p. 817; *C. & S.* no. 1098.

Bombyx crœsi, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 312; *C. & S.* no. 1095.

Bombyx fortunatus, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 312; *C. & S.* no. 1096.

Bombyx sinensis, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 313; *C. & S.* no. 1099.

Bombyx textor, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 309; *C. & S.* no. 1100.

Bombyx arracanensis, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 313; *C. & S.* no. 1094.

♂. Head, thorax, and abdomen whitish. Fore wing whitish; two dark antemedial lines; a line across the end of cell; a post-

medial line. Hind wing with a dark blotch at centre of inner margin; curved medial and postmedial lines.

♀ with the wings often more or less aborted.

In some specimens the outer line of the fore wing is curved and submarginal, or the markings may be entirely obsolete.

Larva dark grey; the head and first three somites with some

Fig. 17.—*Bombyx mori*, ♀. 1/1.

transverse black lines; the first somite with two dark red streaks; the five first somites white below; the 3rd to anal somite with reticulated black dorsal markings; 11th somite with a long horn.

Cultivated forms may be grey or almost white, with the markings almost obsolete.

This species is indigenous to China, and from there introduced all over the world. The forms described by Hutton are simply domesticated races of the larva.

Cocoon yellow or white, the silk closely woven or loose.

Hab. China, and in a domesticated state throughout India and Europe. *Exp.* 42 millim.

Genus **ECTROCTA**, nov.

Type, *E. diaphana*, Hmpsn.

Range. Burma.

Palpi minute. Fore wing much excised below the apex; veins 6, 7, 8, 9, 10, 11 stalked together; veins 7, 8, 9 not much bent downwards. Hind wing with the outer margin much excised at anal angle; vein 5 from the centre of the discocellulars; veins 6 and 7 stalked.

35. **Ectrocta diaphana**, n. sp.

♀. Head, thorax, and abdomen pale ochreous brown, suffused with fuscous. Wings semidiaphanous white. Fore wing with a fuscous basal patch; a subbasal curved fuscous band; a streak on discocellulars; a doubly curved submarginal line; a large apical patch. Hind wing with an antemedial fuscous spot on inner

margin; a maculate postmedial band; outer margin very slightly suffused with fuscous.

Fig. 18.—*Ectrocta diaphana*, ♀. 1/1.

Hab. Momeit, Burma (*Doherty*). *Exp.* 54 millim. Type in coll. Elwes.

Genus **OCINARA.**

Ocinara, *Wlk. Cat.* vii, p. 1768 (1856).
Naprepa, *Wlk. Cat.* v, p. 1152 (1855), nom. præocc.
Trilocha, *Moore, Cat. Lep. E. I. C.* p. 382 (1857).
Ernolatia, *Wlk. Journ. Linn. Soc.* vi, p. 131 (1862).
Chazena, *Wlk. Char. undescr. Het.* p. 21 (1869).

Type, *O. dilectula*, Wlk., from Java.

Range. China; throughout India; Andamans; Borneo; Sumatra; Java.

Palpi minute. Fore wing with vein 6 from or from below the angle of the cell; 7, 8, 9, 10 stalked, 7, 8, 9 much bent downwards; 11 from the cell; vein 1 *c* present; a veinlet in the cell. Hind wing with vein 5 from the centre of the discocellulars; veins 6 and 7 stalked; three internal veins.

36. **Ocinara signifera**, *Walk. Journ. Linn. Soc.* vi, p. 130 (1862).
Ocinara lactea, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 328, pl. 19, fig. 6 (larva); *C. & S.* no. 1110.
Ocinara diaphana, *Moore, Lep. Atk.* p. 83; *C. & S.* no. 1109.

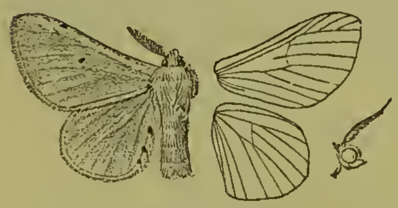

Fig. 19.
Ocinara signifera, ♂. 1/1.

Head, thorax, and abdomen white. Fore wing white, with an opalescent tinge; some black specks on the costa; two black spots in end of cell, either or both of which may be absent, one beyond the end which may be reduced to a speck; two indistinct curved postmedial lines, the outer with fine black streaks on the veins. Hind wing white, with a dark speck at end of cell and a faint postmedial line; some black spots on inner margin; cilia chequered fuscous and white.

The form *diaphana* has the black spots on fore and hind wings absent.

Larva brown, with humps on the 2nd, 4th, and 7th somites, and a horn on 10th somite.

Hab. N.W. Himalayas ; Sikhim ; Khási Hills ; Nilgiris ; Andamans ; Sumatra ; Borneo. *Exp.*, ♂ 34–38, ♀ 34–46 millim.

37. **Ocinara apicalis**, *Wlk. Journ. Linn. Soc.* vi, p. 130 (1862).
Ocinara signata, *Wlk. Journ. Linn. Soc.* vi, p. 131.
Ocinara moorei, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 326 ; *C. & S.* no. 1111.
Ocinara lida, *Moore, Cat. E. I. C.* p. 381.
Bombyx plana, *Wlk. Cat.* xxxii, p. 575.

♂. Differs from *signifera* in having a slight ferruginous tinge ; a ferruginous band inside a waved postmedial line on both wings ; the spots at end of cell of fore wing and those on the costa, except the spot at the postmedial line, absent ; the spots on inner margin of hind wing dark ferruginous.

Larva rough and brown, covered with short hair ; a raised ridge on 2nd somite, with a black patch before it ; a horn on 10th somite.

Hab. Hongkong ; Mussooree ; Borneo ; Java. *Exp.* 38 millim.

38. **Ocinara varians**, *Wlk. Cat.* v, p. 1153 ; *C. & S.* no. 1093 ; *Moore, Lep. Ceyl.* ii, pl. 133, figs. 1, 1 *a*, 1 *b* (larva).
Naprepa albicollis, *Wlk. Journ. Linn. Soc.* vi, p. 171 ; *C. & S.* no. 1091.
Naprepa cervina, *Wlk. Cat.* xxxii, p. 489 ; *C. & S.* no. 1092.
Chazena velata, *Wlk. Char. undescr. Het.* p. 21.

♂. Head, thorax, and abdomen pale or dark red-brown ; the vertex of head and collar sometimes whitish. Fore wing pale reddish brown or greyish ; two antemedial curved waved lines ; a pale streak on the discocellulars surrounded by a dark patch ; two postmedial curved and waved lines somewhat far apart ; a darker patch on the outer margin below the apex ; the costal edge pale ; cilia dark red-brown. Hind wing pale or dark red-brown, or greyish with the outer area red-brown ; a postmedial indistinct line ; inner area pale, with some dark red strigæ crossing it.

The grey form is *albicollis* ; in the redder form *varians* the markings are often almost obsolete.

Larva elongate and brown, with darker dots and a lateral row of black dots ; a slight dorsal protuberance on each of the thoracic, and on the 5th and 8th somites ; a long slender horn on anal somite.

Cocoon silken, slight in texture ; oval and pale.

Hab. Philippines ; China ; Formosa ; throughout India and Ceylon ; Borneo. *Exp.*, ♂ 26, ♀ 32 millim.

Genus GUNDA.

Gunda, *Wlk. Journ. Linn. Soc.* vi, p. 176 (1862).
Norasuma, *Moore, P. Z. S.* 1872, p. 575.
Aristhala, *Moore, P. Z. S.* 1878, p. 704.

Type, *G. ochracea*, Wlk., from Borneo.
Range. Hainan; Sikhim; Ceylon; Java.
Palpi absent. Fore wing with veins 6, 7, 8, 9, 10, 11 stalked; 7, 8, 9 much bent down; a veinlet in the cell. Hind wing with vein 5 from the centre of the discocellulars; veins 6 and 7 stalked.

39. **Gunda javanica**, *Moore, P. Z. S.* 1872, p. 576, pl. 33, fig. 6.

♂. Head, thorax, and abdomen pale brown; the collar fringed with dark brown. Fore wing darkish brown; three transverse

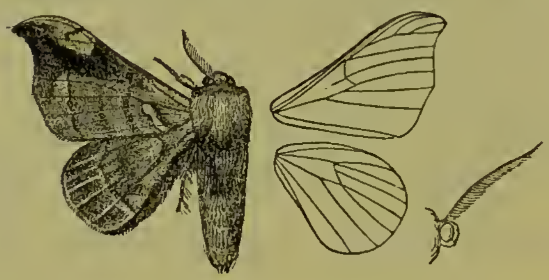

Fig. 20.—*Gunda javanica*, ♂. ½.

indistinct lines; a postmedial more distinct line, highly angulated below the costa; a very dark brown streak from the base to the apex along the costa, leaving a large apical pale patch with an apical dark streak. Hind wing dark brown, with three indistinct lines; inner margin dark with some pale strigæ; two pale submarginal specks near anal angle. Underside with the two outer lines of both wings more distinct and waved.

♀. More uniform grey-brown; the dark streak and apical pale patch of the fore wing obsolete, as are the markings of hind wing.
Hab. Sikhim; Java. *Exp.*, ♂ 48, ♀ 66 millim.

40. **Gunda apicalis**, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 17.

♀. Differs from *javanica* in being much yellower brown; antennæ ochreous; a pale streak on vertex of abdomen. Fore wing with the outer line less angled; the apical dark patch much larger. Hind wing with the lines more distinct.
Hab. Trincomali, Ceylon. *Exp.* 62 millim.

41. **Gunda sikkima**, *Moore, P. Z. S.* 1879, p. 406, pl. 33, fig. 3; *C. & S.* no. 1112.
Norasuma variegata, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 7.
Aristhala thwaitesii, *Moore, Lep. Ceyl.* ii, p. 136; *C. & S.* no. 1113.

♂. Head, thorax, and abdomen red-brown, grizzled with grey.

Fore wing ochreous brown, much suffused with red-brown, especially at inner and outer areas; two dark spots near base; a highly curved subbasal line; two nearly straight medial lines, the outer line met by an oblique streak from the costa across the end of cell; a waved submarginal line; a dark mark at apex. Hind wing red-brown, ochreous towards anal angle and outer margin; two indistinct waved lines; inner area dark red-brown, suffused with grey; two dark marks at anal angle. Underside of hind wing with two dark specks in the cell and the lines more distinct. Where thinly scaled the wing-membrane shows highly iridescent colours.

♀. Yellow; the thorax suffused with reddish brown; the fore wing with reddish brown near inner and outer margins; hind wing suffused with reddish brown at base and near anal angle; the transverse lines as in male, but less distinct.

Hab. Sikhim; Ceylon. *Exp.*, ♂ 42, ♀ 62 millim.

Genus **THEOPHILA**.

Theophila, *Moore, P. Z. S.* 1867, p. 683.

Type, *T. huttoni*, Westw.

Range. N.W. Himalayas; Sikhim; Bengal and ? Madras.

Palpi absent. Fore wing highly excised below the apex; the outer margin slightly angled; veins 6, 7, 8, 9, 10 stalked together, 7, 8, 9 not much bent downwards. Hind wing with vein 5 from above the middle of the discocellulars; veins 6 and 7 stalked.

42. **Theophila huttoni**, *Westw. Cab. Or. Ent.* p. 26, pl. 12, fig. 4; *Hutt. Trans. Ent. Soc.* 1864–66, pl. 19, fig. 4 (larva); *C. & S.* no. 1103.
Bombyx sherwilli, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 324; *C. & S.* no. 1105.
Bombyx affinis, *Hutt., Geoghegan's Silk in India*, App. A, p. 3; *C. & S.* no. 1101.
Bombyx bengalensis, *Hutt. Trans. Ent. Soc.* (3) ii, 1864, p. 322, pl. 19, fig. 5 (larva); *C. & S.* no. 1102.
Bombyx religiosæ, *Helfer, J. A. S. B.* vi, p. 41, pl. 6; *C. & S.* no. 1104.

Fig. 21.—*Theophila huttoni*, ♂. 1/1.

Head, thorax, and abdomen grey-brown. The outer margin of both wings more or less crenulate. Fore wing grey-brown, obliquely curved antemedial and medial indistinct dark lines: a

dark line beyond the discocellulars; an erect postmedial line; one or two doubly curved submarginal lines; a large chocolate apical patch. Hind wing darker; inner margin chequered brown and white; a slightly curved submarginal line. Underside of hind wing with postmedial and submarginal lines.

Abdomen in some specimens with first and last segments dark.

Larva mottled and streaked with yellow, brown, and black; the first three somites very much swollen; paired dorsal spines on 5th to anal somite.

The larva described by Hutton as *bengalensis* was probably a pale variety of the common form, from which it differed in being whitish, marbled with yellowish red and black; the moth mentioned in connection with it was evidently *Bombyx mori*.

Hab. N.W. Himalayas; Sikhim; Assam. *Exp.*, ♂ 40, ♀ 50 millim.

*43. **Theophila ? lugubris**, *Drury, Exot. Ins.* iii, p. 28, pl. 21, fig. 5; *C. & S.* no. 1097.

Head and thorax ash-coloured. Abdomen and wings rusty red; fore wing with some faint bluish marks near outer margin.

This species is certainly either a *Bombyx* or *Theophila*, and probably the latter, having the outer margin of the fore wing angled.

Hab. Madras ? *Exp.* 48 millim.

Genus MUSTILIA.

Mustilia, *Wlk. Cat.* xxxii, p. 580 (1865).

Type, *M. falcipennis*, Wlk.

Range. The Himalayas; Assam.

Palpi minute; antennæ of male bipectinated to two-thirds length. Fore wing very much produced at apex, which is acute; vein 1 *b* forked at base, 1 *c* absent, 3 given off before end of cell, 6 stalked with 7, 8, 9, 10. Hind wing with two internal veins; a bar between veins 7 and 8 near base.

44. **Mustilia falcipennis**, *Wlk. Cat.* xxxii, p. 581; *C. & S.* no. 1482.
Mustilia castanea, *Moore, Lep. Atk.* p. 82; *C. & S.* no. 1481.

Fig. 22.—*Mustilia falcipennis*, ♂. 1/1.

♂. Head and collar chestnut; the shaft of antennæ and a

band between their bases whitish; thorax and abdomen purplish red-brown, the latter yellowish towards extremity. Fore wing red-brown, suffused with grey; a highly angled antemedial indistinct line; a black spot at end of cell; a waved medial line; a postmedial line angled below the costa and waved towards inner margin, met by a black and grey oblique line from the apex. Hind wing with the costal half yellow, the inner half red-brown; two dark lines which approach each other on inner margin; a grey patch near anal angle. Underside yellower, with a black spot at end of cell of hind wing.

The form *castanea* is darker; the hind wing more angled and wholly dark chestnut-red, instead of the costal half yellow; the markings similar.

Hab. Sikhim; Bhutan. *Exp.* 52 millim.

45. **Mustilia sphingiformis**, *Moore, P. Z. S.* 1879, p. 407, pl. 33, fig. 4; *C. & S.* no. 1484.

Differs from *falcipennis* in the head and thorax being purplish grey-brown; the abdomen dark brown. Fore wing pale red-brown, with the markings slight and obsolescent, a speck at end of cell; a doubly curved postmedial line; the whole outer area suffused with chestnut from apex to outer angle as far as the postmedial line at middle. Hind wing ochreous, the inner area brown. Cilia of both wings ochreous.

Hab. Mussooree. *Exp.*, ♂ 58, ♀ 82 millim.

46. **Mustilia hepatica**, *Moore, Lep. Atk.* p. 82, pl. 3, fig. 18; *C. & S.* no. 1483.
Mustilia columbaris, *Butl. P. Z. S.* 1886, p. 387, pl. 35, fig. 7.

♂. Pale red-brown, suffused with grey; shaft of antennæ and a band between their bases white. Fore wing with an indistinct waved antemedial line; a dark spot at end of cell; an oblique postmedial line, usually indistinct, angled below the costa and met by an oblique line from the apex. Hind wing with a curved postmedial indistinct line; two dark strigæ on inner margin. Outer area of both wings not suffused with grey; three grey spots towards outer and anal angles.

♀. More uniform chestnut-brown; fore wing with the cell-spot smaller.

The form *columbaris* from Murree is paler and more uniformly suffused with grey.

Larva greenish brown; the hinder part paler; sphingiform in shape, with a long tail on 11th somite; the cuticle of the anterior part of the body is capable of expansion into large lateral wings, which are retracted when at rest.

Hab. Murree; Sikhim. *Exp.*, ♂ 64, ♀ 90 millim.

Genus ANDRACA.

Andraca, *Wlk. Cat.* xxxii, p. 581 (1865).

Type, *A. bipunctata*, Wlk.
Range. Sikhim; Assam.

Palpi not very small; antennæ of male bipectinated to tip. Fore wing with the apex produced and acute; vein 1 *b* forked at base, 1 *c* absent, 3 and 4 from angle of cell, 6 from upper angle, 7, 8, 9, 10 stalked. Hind wing with the inner margin excised; two internal veins; a bar between veins 7 and 8 near the base.

47. **Andraca bipunctata**, *Wlk. Cat.* xxxii, p. 582; *C. & S.* no. 1328.
Andraca trilochoides, *Moore, P. Z. S.* 1865, p. 820; *C. & S.* no. 1329; *Waterh. Aid*, ii, pl. 132, figs. 1, 2.

Fig. 23.—*Andraca bipunctata*, ♂. ½.

♂. Antennæ dark brown; head, thorax, and abdomen dark red-brown. Fore wing dark red-brown, with some grey scales below the costa; antemedial and medial dark waved lines, curved below the costa; a postmedial double curved line sharply angled below the costa; a black speck at end of cell. Hind wing dark red-brown; the inner margin black, suffused with grey scales; a black dot at end of cell; two waved medial lines which nearly meet on inner margin. Underside: hind wing with the lines more prominent and hardly waved; the outer margin suffused with grey.

♀. Much paler red-brown; the shaft of antennæ white.

The form *trilochoides* is rather brighter, with more grey suffusion on fore wing.

Hab. Sikhim; Assam. *Exp.*, ♂ 48–56, ♀ 66 millim.

The following species formerly recorded as Indian is omitted.

Hanisa subnotata, Walk., C. & S. no. 1106, is from Singapore.

Family EUPTEROTIDÆ.

A family of large-sized moths. The palpi hairy; antennæ pectinated in both sexes; mid tibia with one pair of spurs, hind tibia with two pairs. Frenulum present. Fore wing with vein 1 *b* forked at the base, 1 *c* absent, 5 from or from above the middle of the discocellulars, 10 almost always absent. Hind wing with two internal veins; vein 5 from or from above the middle of the discocellulars; a bar between veins 7 and 8, the latter free from the base.

Larva with five pairs of prolegs, and tufted with hair.

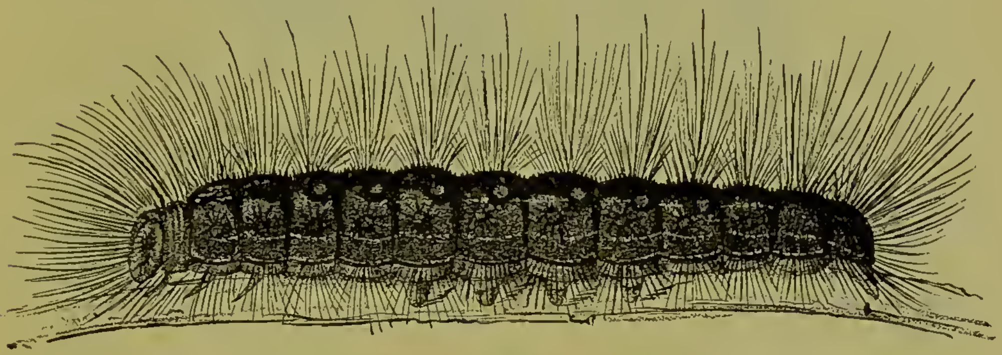

Fig. 24.—Larva of *Eupterote fabia*. $\frac{1}{1}$.
(From Moore, Lep. Ceyl. ii, pl. 136, fig. 1 *b*.)

Key to the Genera.

A. Frons without a corneous ridge.
- *a*. Fore wing with an areole; antennæ Saturniform .... 1. GANGARIDES, p. 42.
- *b*. Fore wing with no areole; antennæ plumose.
  - *a'*. Palpi upturned and thickly fringed with hair in front.
    - a^2. Fore wing with veins 7, 8, 9 given off before end of cell .... 2. PANDALA, p. 43.
    - b^2. Fore wing with veins 7, 8, 9 given off from end of cell.
      - a^3. Fore wing with upper discocellular very oblique .... 3. MELANOTHRIX, [p. 44.
      - b^3. Fore wing with upper discocellular nearly erect.
        - a^4. The discocellulars angled both above and below vein 5 in both wings .... 4. DREATA, p. 44.
        - b^4. The discocellulars angled above vein 5 in both wings.
          - a^5. Fore wing rounded at apex .. 5. PALIRISA, p. 45.
          - b^5. Fore wing produced at apex. . 6. TAGORA, p. 46.
        - c^4. The discocellulars angled at or below vein 5 in both wings.
          - a^5. Hind wing with vein 7 given off before the end of the cell. 7. PSEUDOJANA, p. 48.

b^5. Hind wing with veins 6 and 7 stalked or from angle of cell.
a^6. Hind wing with the costa straight; vein 8 not remote from 7 .... 8. GANISA, p. 49.
b^6. Hind wing with the costa arched; vein 8 remote from 7 .... 9. APHA, p. 51.
b'. Palpi porrect.
a^2. Fore wing with vein 11 arising close to 7, 8, 9.
a^3. Palpi short and somewhat heavily fringed with hair .... 11. EUPTEROTE, p. 54.
b^3. Palpi longer and very heavily fringed with hair; branches of antennæ very long in both sexes. 10. APONA, p. 52.
b^2. Fore wing with vein 11 arising long before 7, 8, 9.
a^3. The wings broad and rounded .. 12. NISAGA, p. 62.
b^3. The wings long and narrow; fore wing with outer margin oblique. 13. SANGATISSA, p. 63.
B. Frons with a corneous ridge .... 14. CNETHOCAMPA, [p. 64.

Genus GANGARIDES.

Gangarides, *Moore, P. Z. S.* 1865, p. 821.

Type, *G. roseus*, Wlk.
Range. E. Himalayas; Burma; Borneo.
Palpi upturned and very thickly fringed with hair. The antennæ with the branches stiff, decreasing rapidly to apex and Saturniform. Legs very thickly clothed with hairs. Fore wing with the apex produced, the outer margin excised and crenulate; the discocellulars nearly straight; vein 7 anastomosing shortly with 8 and 9 to form an areole. Hind wing with the discocellulars straight; veins 6 and 7 stalked.

48. **Gangarides roseus**, *Wlk. Cat.* xxxii, p. 513; *C. & S.* no. 1340.
Gangarides dharma, *Moore, P. Z. S.* 1865, p. 821, pl. 43, fig. 7; *C. & S.* no. 1339.
Lonomia vittipalpis, *Wlk. Char. undescr. Lep.* 1869, p. 90; *C. & S.* no. 1251.

♂. Palpi black, fringed with ochreous hairs; antennæ, head, and thorax ochreous, the latter with a crimson tinge; abdomen crimson above. Fore wing pinkish ochreous, irrorated with brown scales; a curved and waved subbasal dark line; an antemedial slightly waved line; a black dot ringed with white at end of cell; three indistinct waved postmedial lines; a grey and brown curved oblique line from apex; a submarginal lunulate line. Hind wing crimson; the cilia ochreous.
♀. Duller in colour; fore wing with the subbasal line some-

times absent and the speck at end of cell minute; the three post-medial lines prominent.

Fig. 25.—*Gangarides rosea*, ♂. 1/1.

The form *dharma* is much paler ochreous, the hind wing but slightly tinged with crimson; the white cell-spot large, without the black centre.

Hab. Sikhim; Bhutan; Burma. *Exp.*, ♂ 76–96, ♀ 106 millim.

Genus PANDALA.

Pandala, *Wlk. Cat.* iv. p. 921 (1855).

Type, *P. dolosa*, Wlk.

Range. Ceylon.

Palpi upturned and but slightly fringed with hair. Antennæ with the branches long. Legs with the spurs long. Fore wing short, broad, and rounded; the discocellulars oblique; veins 7, 8,

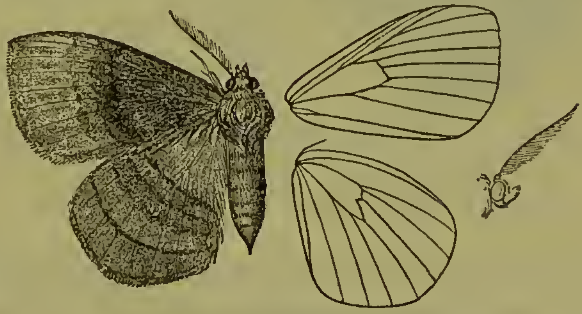

Fig. 26.—*Pandala dolosa*, ♂. 1/1.

9 stalked and given off before the end of the cell. Hind wing with the discocellulars slightly angled below vein 5; 6 and 7 from angle of cell.

49. **Pandala dolosa**, *Wlk. Cat.* iv, p. 922; *Moore, Lep. Ceyl.* ii, pl. 134, fig. 5; *C. & S.* no. 1338.

♂. Dark purplish grey; fore wing crossed by three antemedial

indistinct waved lines, three postmedial and one straight submarginal line; hind wing by four waved postmedial lines and a curved submarginal line.

Hab. Ceylon. *Exp.* 48 millim.

Genus **MELANOTHRIX.**

Melanothrix, *Feld. Reis. Nov.* pl. 94, fig. 2, *Erkl.* p. 6 (1874).

Type, *M. nymphaliaris*, Wlk., from Java.

Range. Burma; Java.

Palpi upturned and thickly fringed with hair; antennæ with the branches moderately long. Legs hairy. Fore wing short and very broad, the apex much rounded, the upper discocellular very oblique; veins 6, 7, 8, 9 stalked. Hind wing with the upper discocellular short and oblique; veins 6 and 7 stalked; 8 much curved and remote from 7.

50. **Melanothrix leucotrigona,** n. sp.

♂. Head, thorax, abdomen, and wings glossy brown; fore wing with a large shining white triangular mark on the costa

Fig. 27.—*Melanothrix leucotrigona*, ♂. 1/1.

beyond the middle, its apex on vein 5; a large area below it and its outer edge dark brown; hind wing with a marginal dark brown band.

Hab. Malewoon, Burma. *Exp.* 74 millim. Type in coll. Druce.

Genus **DREATA.**

Dreata, *Wlk. Cat.* iv. p. 902 (1855).

Type, *D. hades*, Wlk.

Range. Assam.

Palpi long and thickly fringed with hair. Fore wing short, with apex rounded; the discocellulars angled above and below vein 5; veins 7, 8, 9 stalked. Hind wing with the discocellulars angled above and below vein 5; 6 and 7 from angle of cell.

51. **Dreata hades**, *Wlk. Cat.* iv, p. 908; *Butl. Ill. Het.* v, pl. 97, fig. 7; *C. & S.* no. 1367.

♂. Head, thorax, and abdomen mouse-brown. Fore wing mouse-brown, the medial area pale; five indistinct waved lines; a

Fig. 28.—*Dreata hades*, ♂. 1/1.

nearly straight and erect prominent postmedial line; a waved submarginal line. Hind wing pale at base, without the waved lines; the postmedial line not so prominent; a submarginal waved line.

Hab. Assam. *Exp.* 72 millim.

Genus **PALIRISA.**

Palirisa, *Moore, Trans. Ent. Soc.* 1884, p. 360.

Type, *P. lineosa*, Wlk.

Range. E. Himalayas and Assam; Burma.

Palpi upturned and thickly fringed with hair. Antennæ with the branches short. Legs with the spurs short. Fore wing very broad, the apex rounded, the discocellulars oblique and angled above vein 5; veins 7, 8, 9 stalked. Hind wing with the discocellulars oblique and angled above vein 5.

52. **Palirisa lineosa**, *Wlk. Cat.* iv, p. 912; *Butl. Ill. Het.* v, pl. 98, fig. 4; *C. & S.* no. 1366.

Pale reddish ochreous. Fore wing crossed by six nearly straight

and erect lines, the fourth slightly waved and often obsolescent, the submarginal line curved and inwardly edged with grey. Hind

Fig. 29.—*Palirisa lineosa*, ♂. ⅔.

wing with one antemedial and two postmedial lines, the outer line curved.

Hab. Sikhim; Bhutan; Sylhet; Nága Hills. *Exp.*, ♂ 100–110, ♀ 120–128 millim.

53. **Palirisa cervina**, *Moore, P. Z. S.* 1865, p. 807; *C. & S.* no. 1365.

♂. Differs from *lineosa* in being pale grey-brown; the palpi black, fringed with ochreous hair; antennæ black. Fore wing with only the medial and postmedial rufous lines present, the latter with a waved line beyond it, between which and the postmedial line the colour is darker. Hind wing with three obsolescent lines and no outer line.

In a specimen from Burma the palpi and antennæ are pale.

Hab. Sikhim; Bernardmyo, Burma. *Exp.* 104 millim.

Genus TAGORA.

Tagora, *Wlk. Cat.* v, p. 1188 (1855).
Sphingognatha, *Feld. Reis. Nov.* pl. 94, fig. 1, *Erkl.* p. 9 (1874).

Type, *T. patula*, Wlk.

Range. Throughout India and Ceylon; Sumatra; Borneo.

Palpi upturned and thickly fringed with hair. Fore wing produced at apex and very broad; the discocellulars nearly erect and angled above vein 5; 7, 8, 9 stalked. Hind wing with the discocellulars nearly erect and angled above vein 5; 6 and 7 from angle of cell.

Sect. I. Fore wing with apex much produced in female.

54. **Tagora patula**, *Wlk. Cat.* v, p. 1189; *Butl. Ill. Het.* v, pl. 98, fig. 1; *C. & S.* no. 1359.
Tagora undulosa, *Wlk. Cat.* v, p. 1196; *C. & S.* no. 1360.
Sphingognatha khasiana, *Moore, Lep. Atk.* p. 77.

♂. Head black; basal joint of antennæ with a tuft of pale hair; thorax, abdomen, and wings pale reddish ochreous. Fore wing usually with a hyaline spot at end of cell; two rufous oblique lines from lower angle of cell to inner margin; eight or nine indistinct dark waved lines; a double highly curved rufous postmedial line from the costa near apex to outer angle; a submarginal highly waved irregular indistinct dark line. Hind wing with a rufous

Fig. 30.—*Tagora patula*, ♂. ½.

subbasal line, obsolete except towards inner margin; about four very indistinct waved lines; the rufous postmedial line indistinct; an irregularly placed series of submarginal spots.

One specimen in Mus. Oxon. has vein 7 of the fore wing given off from 6 instead of 8.

♀. Suffused with fuscous; the apex of fore wing produced; the outer area of both wings suffused with grey; the oblique line of both wings single and prominent; the waved lines more distinct; two hyaline spots at end of cell of fore wing; the rufous postmedial line more distinct; a waved submarginal grey line to both wings.

Hab. Sikhim; Assam; Momeit, Burma. *Exp.*, ♂ 100, ♀ 130 millim.

SECT. II. Fore wing with apex slightly produced in female.

55. **Tagora pallida**, *Wlk. Cat.* iv, p. 912; *Butl. Ill. Het.* v, pl. 98, fig. 3; *C. & S.* no. 1362.
Sphingognatha asclepiades, *Feld. Reis. Nov.* pl. 94, fig. 1.

♂. Differs from *patula* in the head being dark red-brown; the tuft on basal joint of antennæ dark. Fore wing without the hyaline spot; the two medial waved lines are distant at costa and inner margin and nearly meet at middle; the double postmedial lines of both wings are dark, narrow, nearer together and less curved.

♀. Much suffused with brown; one hyaline spot at end of cell of fore wing.

Hab. Sylhet; Sumatra; Borneo. *Exp.*, ♂ 120, ♀ 180 millim.

56. **Tagora nigriceps,** *Hmpsn. Ill. Het.* ix, ined., pl. 161, fig. 19.

♂. Head black, with a tuft of pale hair on basal joint of antennæ; thorax, abdomen, and wings brownish grey. Fore wing with traces of some waved antemedial lines; a hyaline speck at end of cell; five waved lines beyond the middle; the post-medial line indistinct, the waved submarginal line sending dark streaks along the veins to the postmedial line, the undulation between veins 2 and 3 being filled in by a dark brown blotch. Hind wing with four waved lines before the postmedial straight line, which is just beyond the middle; the waved submarginal line remote from the margin.

Hab. Deltota, Ceylon. *Exp.* 96 millim.

57. **Tagora murina,** *Moore, A. M N. H.* (4) xx, 1877, p. 347; *Lep. Ceyl.* ii, pl. 136, fig. 2; *Hmpsn. Ill. Het.* ix, pl. 161, fig. 18 ♀; *C. & S.* no. 1357.

♂. Greyish red-brown; head dark brown, with a pale tuft on basal joint of antennæ; fore wing with four indistinct antemedial lines; no hyaline speck at end of cell; five waved postmedial lines, the innermost nearly meeting the outermost antemedial line on the disk; the postmedial straight line double and distinct; the area between it and the outer waved line suffused with grey. Hind wing with four or five waved lines before the straight double line, which is some way beyond the middle; the waved outer line near the margin, the area beyond it suffused with grey.

♀. Much redder brown; fore wing with two hyaline spots at end of cell.

Hab. Pundaloya, Ceylon. *Exp.*, ♂ 84, ♀ 94 millim.

Genus **PSEUDOJANA**, nov.

Type, *P. incandescens*, Wlk.

Range. Sikhim.

Palpi upturned and thickly fringed with hair. Antennæ with the branches rather short in both sexes. Legs with the spurs long. Fore wing broad and rounded, the discocellulars nearly straight; veins 7, 8, 9 stalked. Hind wing with the discocellulars angled below vein 5; 7 given off just before the angle of cell.

58. **Pseudojana incandescens,** *Wlk. Cat.* iv, p. 910; *Butl. Ill. Het.* v, pl. 98, fig. 5; *C. & S.* no. 1363.

Head, collar, and prothorax dark chestnut-brown; meso- and

metathorax dull brown; abdomen bright reddish fulvous. Fore wing greyish brown; traces of a subbasal curved grey line; indistinct antemedial, medial, and postmedial erect straight dark lines, the last inwardly edged with grey; an indistinct submarginal line

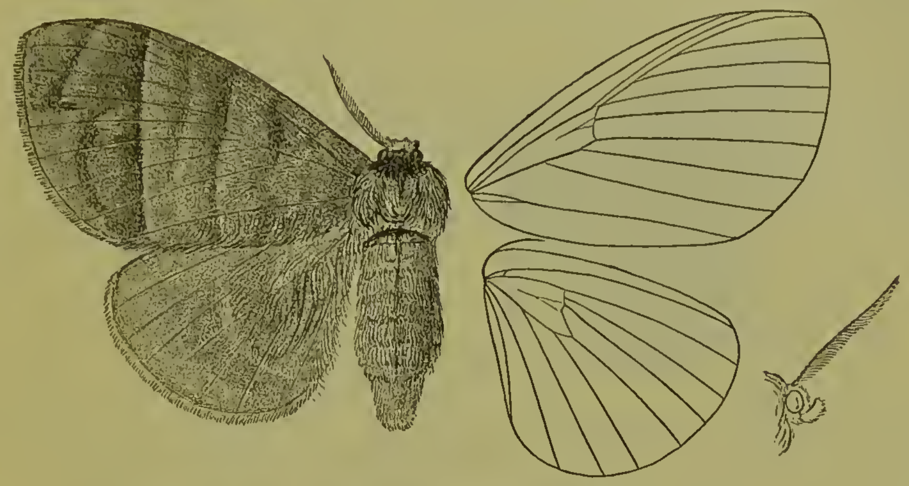

Fig. 31.—*Pseudojana incandescens*, ♂. ½.

angled at vein 4. Hind wing duller brown; an indistinct medial curved line. Underside with a fiery red tinge; the wings crossed by a medial and oblique postmedial line.

Hab. Sikhim. *Exp.* 130 millim.

Genus **GANISA.**

Ganisa, *Wlk. Cat.* v, p. 1190 (1855).

Type, *G. postica*, Wlk.

Range. Throughout India and Ceylon.

Palpi upturned and thickly fringed with hair. Fore wing broad, the apex acute and produced; the discocellulars angled below vein 5; veins 7, 8, 9 stalked. Hind wing with the discocellulars oblique; veins 6 and 7 stalked or from cell. Legs with the spurs long.

Sect. I. Hind wing with veins 6 and 7 from angle of cell.

59. **Ganisa postica**, *Wlk. Cat.* v, p. 1190; *C. & S.* no. 1347.
Ganisa plana, *Wlk. Cat.* v, p. 1191; *Butl. Ill. Het.* v, pl. 96, figs. 4, 5; *C. & S.* no. 1346.
Ganisa similis, *Moore, Trans. Ent. Soc.* 1884, p. 359; *C. & S.* no. 1348.

♂. Head very dark brown; thorax, abdomen, and wings purplish grey-brown. Fore wing with an indistinct antemedial oblique line; a black and grey speck at end of cell; five indistinct waved dark lines; a double oblique, nearly straight line from apex to inner margin beyond the middle. Hind wing sometimes with a black speck at end of cell; three waved indistinct lines; the postmedial

line oblique and slightly waved, generally with a series of dark specks beyond it; cilia of both wings red-brown. Underside with the specks at end of cell and waved lines more distinct.

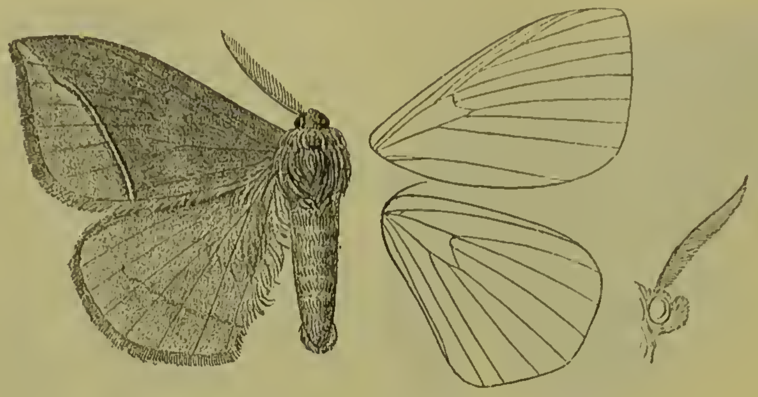

Fig. 32.—*Ganisa postica*, ♂. 1/1.

♀ with the apex of fore wing more produced.

Hab. Kulu; Kangra; Sikhim; Sylhet; Nágas; Ceylon. *Exp.* 68 millim.

SECT. II. Hind wing with veins 6 and 7 stalked.

60. **Ganisa pandya**, *Moore, P. Z. S.* 1865, p. 807; *C. & S.* no. 1358.
Ganisa pallida, *Butl. Ill. Het.* v, p. 65, pl. 96, fig. 3; *C. & S.* no. 1345.

♂. Differs from *postica* in being fawn-colour; the head black. Fore wing with a pale speck at end of cell: hind wing without waved lines; a dark spot on inner margin; a medial dark line with ochreous outer edge; a submarginal series of black specks.

Hab. Sikhim; Bhutan; Sylhet. *Exp.* 90 millim.

61. **Ganisa glaucescens**, *Wlk. Cat.* v, p. 1188; *Butl. Ill. Het.* v, pl. 96, figs. 1, 2; *C. & S.* no. 1356.

♂. Differs from *pandya* in being dark red-brown. Fore wing with a yellow speck at end of cell; two dark indistinct waved lines; the double postmedial line recurved below the costa, with fulvous between the two lines; the area between it and the outer waved line suffused with grey; a marginal grey line. Hind wing with the postmedial line curved; the markings of the outer area as on fore wing.

♀. More ochreous in tone, with hardly any grey suffusion on outer area.

Hab. Sikhim. *Exp.*, ♂ 80, ♀ 94 millim.

Genus APHA.

Apha, *Wlk. Cat.* v, p. 1180 (1855).
Prismosticta, *Butl. A. M. N. H.* (5) vi, p. 67 (1880).

Type, *A. subdives*, Wlk.
Range. Japan; Sikhim; Assam.
Palpi upturned and slightly fringed with hair. Antennæ with the branches short. Fore wing with the apex acute and produced; the discocellulars nearly straight; veins 7, 8, 9 stalked. Hind wing with the upper discocellular oblique; 6 and 7 stalked; 8 curved and remote from 7.

SECT. I. (*Apha*). Fore wing with vein 8 given off far before the apex; 10 absent.

62. **Apha subdives**, *Wlk. Cat.* v, p. 1180; *Butl. Ill. Het.* v, pl. 94, figs. 7, 8; *C. & S.* no. 1344.

♂. Head vinous red-brown; thorax and abdomen purplish brown. Wings brownish ochreous. Fore wing with a purplish patch on the costa near the base; about four very indistinct antemedial waved lines; a speck at end of cell; four or five much waved indistinct postmedial lines approaching the antemedial lines below the cell; a very oblique dark and yellow line acutely angled

Fig. 33.—*Apha subdives*, ♂. $\frac{1}{1}$.

below the apex and irregularly waved below the costa; outer area yellow, with two waved submarginal lines. Hind wing with traces of antemedial waved lines; an oblique medial line; a doubly dentate submarginal line formed like a series of the letter "W." Underside much more brilliantly coloured.
♀. Paler and yellower.
Hab. Khásis; Sylhet; Nágas. *Exp.*, ♂ 72, ♀ 86 millim.

63. **Apha floralis**, *Butl. Ill. Het.* v, p. 64, pl. 94, figs. 5, 6; *C. & S.* no. 1342.

♂. Differs from *subdives* in the apex of the fore wing being much more produced and the costa straighter; thorax and abdomen ochreous, the former with the collar and tegulæ purplish; the latter with a rufous tinge. Wings bright yellow; fore wing with the area before the postmedial line less irregular; the inner submarginal line doubly dentate; the outer margin suffused with brown; hind wing with the area before the medial line suffused with pink, and the line itself bright pink; the submarginal line reduced to a series of dots on the nervules connected by a faint waved line. Underside bright chestnut-brown, the outer area yellow.

♀. Without the purple suffusion on the fore wing, and much more pink suffusion.

Hab. Sikhim. *Exp.*, ♂ 64, ♀ 74 millim.

SECT. II. (*Prismosticta*). Fore wing with vein 8 given off near the apex; 10 present.

64. **Apha fenestrata**, *Butl. A. M. N. H.* (5) vi, 1880, p. 68; *id. Ill. Het.* vi, pl. 106, fig. 5; *C. & S.* no. 1107.

♀. Head, thorax, and abdomen red-brown; thorax with an olive tinge. Fore wing olive-brown; the costal and outer areas pale; two medial indistinct angled brown lines; a brown line on discocellulars; two oblique postmedial lines, angled below the costa and waved towards inner margin; apex grey, with a triangular hyaline patch. Hind wing red-brown; a line on discocellulars and two slightly waved postmedial brown lines.

Hab. Sikhim. *Exp.* 50 millim.

Genus **APONA**.

Apona, *Wlk. Cat.* vii, p. 1762 (1856).

Type, *A. cashmirensis*, Koll.

Range. N.W. Himalayas, Nilgiris, Shevaroys; Ceylon.

Palpi slight, porrect, and very hairy. Antennæ with the branches very long and slender in the male, shorter in the female. Legs with the spurs very long. Fore wing broad, with the outer margin rounded; the discocellulars nearly straight; veins 7, 8, 9 stalked. Hind wing with the discocellulars angled below vein 5, which is given off near upper angle of cell; veins 6 and 7 from the angle.

SECT. I. Fore wing with the apex more or less produced.

65. **Apona cashmirensis**, *Koll. Hüg. Kasch.* iv, p. 472, pl. 21, fig. 4; *C. & S.* no. 1349.

Apona pallida, *Wlk. Cat.* vii, p. 763; *C. & S.* no. 1350.

♂. Head, thorax, and abdomen red-brown; shaft of antennæ white. Wings pale red-brown. Fore wing with an indistinct waved subbasal line; a black spot at end of cell; an oblique medial line, with three indistinct waved lines beyond it; a double postmedial line with the interspace pale; a waved submarginal line,

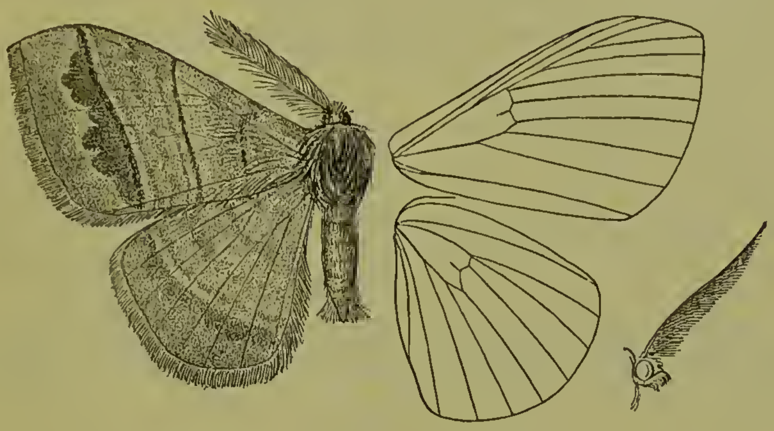

Fig. 34.—*Apona cashmirensis*, ♂. 1/1.

the space between it and the postmedial line darker; the nervules dark from the medial to submarginal line. Hind wing with no subbasal line; the other lines curved. Cilia of both wings dark.

♀. Pale greyish white; the markings as in male.

Hab. N.W. Himalayas; Sikhim. *Exp.*, ♂ 114, ♀ 96 millim.

SECT. II. Fore wing with the apex not produced.

66. **Apona plumosa,** *Moore, P. Z. S.* 1872, p. 579; *Hmpsn. Ill. Het.* viii, pl. 142, fig. 12; *C. & S.* no. 1351.

♂. Differs from *cashmirensis* in being darker red-brown. Fore wing with the medial line curved below the costa; but faint traces of the waved lines; the postmedial line whitish inwardly, rufous outwardly; the outer area darker, without a waved line, the veins crossing it rufous. Hind wing with the waved and postmedial lines almost obsolete; the outer area dark, without a waved line.

♀. The waved medial lines more distinct on both wings; the postmedial line dark brown.

Hab. Nilgiri plateau. *Exp.*, ♂ 94, ♀ 102 millim.

67. **Apona shevaroyensis,** *Moore, Trans. Ent. Soc.* 1884, p. 373; *C. & S.* no. 1352.

♂. Differs from *plumosa* in being duller brown; fore wing with the antemedial line obsolete; the medial and postmedial lines more oblique; the waved lines more distinct.

Hab. Nilgiri plateau; Shevaroys; Ceylon. *Exp.* 134 millim.

Genus EUPTEROTE.

Eupterote, *Hübn. Verz.* p. 187 (1818).
Murlida, *Moore, Lep. E. I. C.* p. 422 (1857).
Brachytera, *Feld. Reis. Nov.* pl. 95, fig. 1 (1874).
Horanpella, *Moore, Lep. Ceyl.* ii. p. 143 (1883).
Leptojana, *Butl. Ill. Het.* v, p. 68 (1881).
Pachyjana, *Butl. Ill. Het.* v, p. 69 (1881).
Spalyria, *Moore, Trans. Ent. Soc.* 1884, p. 370.
Messata, *Wlk. Cat.* v, p. 1107 (1855).

Type, *E. fabia*, Cram.

Range. Throughout India, Ceylon, and Burma; Sumatra, Java, Philippines.

Palpi very slight and porrect. Antennæ with the branches moderately long. Legs somewhat hairy. Fore wing broad, the outer margin rounded; the discocellulars angled below vein 5; vein 6 stalked with 7, 8, and 9, or from the cell. Hind wing with the discocellulars angled below vein 5; veins 6 and 7 stalked or from angle of cell.

Sect. I. Female without patches of raised scales.

68. **Eupterote undata**, *Blanch., Jacq. Voy. Inde, Zool. Ins.* p. 23, pl. 1, fig. 8; *C. & S.* no. 1410.
Dreata undifera, *Wlk. Cat.* iv, p. 904.
Eupterote nigricans, *Moore, Trans. Ent. Soc.* 1884, p. 365; *C. & S.* no. 1397.
Eupterote diabolica, *Swinh. P. Z. S.* 1885, p. 303; *C. & S.* no. 1381.
Eupterote hirsuta, *Swinh. Trans. Ent. Soc.* 1891, p. 139.
Eupterote variegata, *Moore, Trans. Ent. Soc.* 1884, p. 362; *C. & S.* no. 1411.
Eupterote sinuata, *Moore, Trans. Ent. Soc.* 1884, p. 363; *C. & S.* no. 1404.
Eupterote caliginosa, *Moore, Trans. Ent. Soc.* 1884, p. 367; *C. & S.* no. 1372.
Eupterote subdita, *Moore, Trans. Ent. Soc.* 1884, p. 361; *C. & S.* no. 1405.
Eupterote vinosa, *Moore, Trans. Ent. Soc.* 1884, p. 361; *C. & S.* no. 1412.
Eupterote affinis, *Moore, Trans. Ent. Soc.* 1884, p. 369; *C. & S.* no. 1368.
Eupterote cupreipennis, *Moore, Trans. Ent. Soc.* 1884, p. 361; *C. & S.* no. 1379.
Eupterote invalida, *Butl. Ill. Het.* v, p. 68, pl. 97, figs. 3, 4; *C. & S.* no. 1391.
Eupterote persimilis, *Moore, Trans. Ent. Soc.* 1884, p. 368; *C. & S.* no. 1401.
Dreata taooensis, *Moore, P. Z. S.* 1878, p. 848, pl. 53, fig. 7; *C. & S.* no. 1407.
Eupterote similis, *Moore, Trans. Ent. Soc.* 1884, p. 369; *C. & S.* no. 1403.
Eupterote castanoptera, *Moore, Trans. Ent. Soc.* 1884, p. 365; *C. & S.* no. 1374.
Eupterote cinnamomea, *Moore, Trans. Ent. Soc.* 1884, p. 368; *C. & S.* no. 1375.

Eupterote consimilis, *Moore, Trans. Ent. Soc.* 1884, p. 364; *C. & S.* no. 1377.
Eupterote dissimilis, *Moore, Trans. Ent. Soc.* 1884, p. 368; *C. & S.* no. 1384.
Eupterote assimilis, *Moore* (dissimilis *misprint*), *Trans. Ent. Soc.* 1884, p. 363.
Eupterote griseipennis, *Moore, Trans. Ent. Soc.* 1884, p. 362; *C. & S.* no. 1386.
Dreata imbecilis, *Wlk. Cat.* iv, p. 905; *Butl. Ill. Het.* v, pl. 97, fig. 2; *C. & S.* no. 1389.
Eupterote ignavus, *Swinh. P. Z. S.* 1886, p. 440; *C. & S.* no. 1388.
Eupterote suffusa, *Moore, Trans. Ent. Soc.* 1884, p. 362; *C. & S.* no. 1406.
Eupterote fraterna, *Moore, P. Z. S.* 1888, p. 406; *Butl. Ill. Het.* vii, pl. 123, fig. 1; *C. & S.* no. 1385 A.
Eupterote decorata, *Moore, Trans. Ent. Soc.* 1884, p. 369; *C. & S.* no. 1380.

Fore wing with eight indistinct waved lines, any or all of which may become obsolete, this occurring in similarly coloured specimens from the same locality; two postmedial lines which are always present, with a highly waved line beyond them; some forms have three dark spots below the costa between the postmedial and waved lines and two towards inner margin. Hind wing without lines on basal area; five waved lines before the two postmedial lines; some spots between the postmedial and waved lines, which may be obsolete or become a complete series.

The form *nigricans*=*diabolica*, from Jubbulpore, Saugor, Belgaum (♂ 110 millim.), is the darkest; umber-brown, with all the lines and spots inside the waved line present.

Sinuata, from the Himalayas (♂ 116 millim.), has the ground-colour paler umber-brown, especially between the postmedial and waved lines; the markings similar.

Undata=*undifera*=*vinosa*=*affinis*, from Jubbulpore and Sikhim (♂ 94–102, ♀ 106 millim.), has a slightly redder tinge, the collar in some specimens yellowish; female with the ground-colour redder or yellowish.

Caliginosa, from Jubbulpore (♂ 82 millim.), is dusky brown, the submarginal spots well defined.

Subdita, from Jubbulpore (♂ 82 millim.), is a small dark red-brown form, the collar yellowish.

Hirsuta, from Khandalla (♂ 110 millim.), has the collar yellow, wings with the ground-colour yellow and much suffused with reddish umber so as to obscure the waved lines; the spot near inner margin of fore wing black and conspicuous.

Variegata, from Jubbulpore (♂ 92 millim.), is redder in tone, the spot indistinct.

Cupreipennis, from Madras (♂ and ♀ 110 millim.), is nearest *undata*, but has a reddish-coppery tinge; the male has a large black patch on the middle of the costa of the fore wing; the female paler, with the markings rather indistinct.

Invalida=*taooensis*=*imbecilis*=*cinnamomea*=*similis*=*consimilis*

=*castanoptera*=*persimilis*, from throughout India and Burma (♂ 78, ♀ 90 millim.), is paler cinnamon-brown, with no spots inside the waved line; the collar yellowish; female redder.

Dissimilis = *suffusa* = *ignavus* = *assimilis* = *griseipennis*, from N.W. India and Mhow (♂ 81–94, ♀ 94 millim.), has spots inside the waved line.

Fraterna, from Dharmsála (♂ 90 millim.), is pale vinous brown, with the waved lines obsolescent, except one medial line on fore wing.

Decorata, from the Punjab (♂ 92 millim.), has the ground-colour yellow; the red-brown markings broad and prominent; apex of fore wing suffused with red-brown.

Hab. Throughout N. India, and as far south as the Nilgiris; Burma. *Exp.* 74–110 millim.

69. **Eupterote fabia**, *Cram. Pap. Exot.* iii, pl. 250 B; *C. & S.* no. 1385.
Eupterote gyra, *Swinh. P. Z. S.* 1885, p. 303; *C. & S.* no. 1387.
Eupterote alterata, *Moore, Trans. Ent. Soc.* 1884, p. 366; *C. & S.* no. 1369.
Eupterote discordans, *Butl. Ill. Het.* v, p. 66, pl. 96, figs. 6, 7; *C. & S.* no. 1383.
Eupterote mutans, *Wlk. Cat.* iv, p. 904; *C. & S.* no. 1396.
Eupterote auriflua, *Moore, Trans. Ent. Soc.* 1884, p. 364; *C. & S.* no. 1371.
Eupterote immutata, *Moore, Trans. Ent. Soc.* 1884, p. 366; *C. & S.* no. 1390.
Eupterote permutata, *Moore, Trans. Ent. Soc.* 1884, p. 366; *C. & S.* no. 1400.
Eupterote fasciata, *Moore, Lep. Ceyl.* iii. p. 544, pl. 212, fig. 1.
Eupterote ochripicta, *Moore, P. Z. S.* 1879, p. 410; *Lep. Ceyl.* ii. pl. 136, figs. 1, 1 *a*, *b* (larva); *C. & S.* no. 1399.
Eupterote lucia, *Butl. A. M. N. H.* (5) xvi, 1885, p. 346, pl. 8, fig. 4; *C. & S.* no. 1393.

♂. Differs from *undata* in having the ground-colour bright yellow.

♀ of some forms brown, as in *undata*, in others suffused with bright red-brown, in others yellow.

The line drawn between the *fabia* and *undata* sets of forms is purely artificial, and merely for convenience.

The form *discordans*, from Calcutta (♂ 80–94, ♀ 88 millim.), has the male bright yellow, the waved lines, postmedial lines, and outer waved line very prominent; the yellow may have an olive tinge, or the head, thorax, abdomen, and base and outer margin of fore wing may be yellow, whilst the whole medial area is suffused with umber-brown; the female is brown, and similar to that sex of *invalida*.

Mutans=*immutata*=*permutata*=*auriflua*, from Sikhim, Nepal, Malabar (♂ 94, ♀ 106 millim.), is yellow, the waved lines almost obsolete, the postmedial lines and spots red-brown; female much more suffused with red.

Alterata, from Sikhim (♂ 112 millim.), is brighter yellow; all the markings indistinct, except the spots within the waved line of the fore wing; female brown.

Fig. 35.—*Eupterote fabia*, ♂. $\frac{1}{1}$.

Fabia, from Madras (♂ 90 millim.), is chrome-yellow, the waved lines of both wings obsolescent; the inner postmedial line very strongly marked, the spots below the costa of fore wing forming a blotch; hind wing with the waved outer line obsolete.

Gyra, from Belgaum (♂ 102 millim.), has the spots towards inner margin of fore wing and waved outer line of hind wing present.

Ochripicta=*fasciata*, from Ceylon (♂ 130, ♀ 116–130 millim.), has the spots below the costa of fore wing separate; in the female the colour is mustard-yellow, the waved lines coming out very strongly red-brown, or both wings may be almost wholly suffused with bright chestnut, so as to obscure the markings; head, thorax, and abdomen yellowish brown.

Larva of the form *ochripicta* is dark purplish brown; dorsal tufts of long and short hair; lateral and sublateral short tufts; three paired series of white dots on each somite; a series of red subdorsal spots on 5th to 11th somites.

Cocoon pale brown.

Hab. Sikhim; throughout N. and S. India; Ceylon. *Exp.* 90–130 millim.

70. **Eupterote mollifera**, *Wlk. Cat.* xxxii, p. 376; *C. & S.* no. 1394.
Apha flava, *Moore, Trans. Ent. Soc.* 1884, p. 359; *C. & S.* no. 1341.
Tagora anthereata, *Wlk. Cat.* xxxii, p. 512.

Bomochroa ornata, *Feld. Reis. Nov.* pl. 94, fig. 3.
Tagora discrepans, *Moore, Trans. Ent. Soc.* 1884, p. 360; *C. & S.* no. 1355.
Eupterote contaminata, *Moore, Trans. Ent. Soc.* 1884, p. 363; *C. & S.* no. 1378.
Eupterote mollis, *Moore, Trans. Ent. Soc.* 1884, p. 367; *C. & S.* no. 1395.
Eupterote todara, *Moore, Trans. Ent. Soc.* 1884, p. 364; *C. & S.* no. 1408.
Eupterote rufodisca, *Hmpsn. Ill. Het.* viii, p. 64, pl. 142, fig. 11.
Eupterote flavia, *Hmpsn. Ill. Het.* viii, p. 64, pl. 142, fig. 10.
Eupterote rectifascia, *Hmpsn. Ill. Het.* viii, p. 65, pl. 142, fig. 4.
Eupterote lativittata, *Moore, Trans. Ent. Soc.* 1884, p. 367; *C. & S.* no. 1392.
Eupterote canaraica, *Moore, P. Z. S.* 1879, p. 410; *C. & S.* no. 1373.
Eupterote nilgirica, *Moore, Lep. Atk.* p. 77; *C. & S.* no. 1398.

Differs from *fabia* in being smaller, with the ground-colour always yellow or drab in both sexes, often more or less suffused with rufous; the fore wing has at most five waved lines within the double postmedial lines, one of which is often obsolete; the hind wing three lines at most within the postmedial lines; the outer waved line and spots within it variable.

The form *discrepans=contaminata*, from Bombay and Canara (♂ 84 millim.), has the thorax suffused with rufous; fore wing with the rufous waved lines obsolete on the disk and inner margin; neither wing with spots inside the outer waved line, but a rufous suffusion between it and the outer postmedial line; a rufous spot on inner margin of hind wing near the base; cilia dark rufous-brown.

Mollifera=flava=anthereata=ornata, from the Nilgiris and Ceylon (♂ 64, ♀ 80 millim.), has, in the male, the fore wing more uniformly suffused with brownish rufous; the spots inside the outer waved line of both wings present, those towards the costa of fore wing grey; female yellower, with the grey spots larger and forming a more complete series.

Mollis=todara, from Bombay and the Nilgiris (♂ 64, ♀ 72 millim.), has the cilia yellow, the postmedial lines indistinct, the black spots near inner margin of fore wing prominent, the inner postmedial line of hind wing nearer the base; its variety *rufodisca*, from the Nilgiris (♂ 68 millim.), has the costa and whole medial area of fore wing suffused with rufous.

Flavia, from the Nilgiris (♂ 72 millim.), is much paler yellow; the spots within the outer waved line of both wings dark, not grey; cilia of fore wing brown below the apex.

Rectifascia, from the Nilgiris (♂ 70 millim.), is pale dull brown, the markings indistinct, except the inner postmedial line of both wings, which appears as a strong dark line.

Canaraica=lativittata, from Bombay, Canara, and the Nilgiris (84 millim.), has the male yellow, much suffused with red-brown, the outer margin of both wings red-brown; female brownish ochreous, the fore wing with one subbasal, and both wings with one

medial waved line; the postmedial line, the spots, and outer waved line prominent.

Nilgirica is without the postmedial waved line.

Larva of the form *mollifera* is whitish speckled with black; dorsal tufts of black hairs on each somite arising from a whitish hump; a dorsal blue-black band; a subdorsal pinkish band traversed by a grey line; a series of small lateral black spots; sublateral area purplish grey with long hairs; stigmata and legs pink; head black.

Hab. Throughout S. India and Ceylon. *Exp.* 64–84 millim.

71. **Eupterote flavicollis,** *Guér. Voy. Deless. Hist. Nat.* p. 94, pl. 27, fig. 1; *C. & S.* no. 1415.
Bombyx collaris, *Guér. Voy. Deless. Hist. Nat.* p. 95; *C. & S.* no. 1414.
Bombyx adolphæi, *Guér. Voy. Deless. Hist. Nat.* p. 96; *C. & S.* no. 1413.

♂. Differs from typical *mollifera* in the thorax being red-brown. Fore wing with five or six waved lines before the postmedial line, which is curved; the grey spots take the form of a complete waved band and are further from the postmedial line; between the line and grey band is a conjoined series of dark spots, those towards inner margin largest. Hind wing with a single postmedial curved line, and sometimes medial and outer lines. Underside with medial, postmedial, and outer waved lines.

♀. Reddish brown; the collar not yellow; abdomen brown; both wings with an indistinct postmedial line; fore wing with the submarginal grey band nearly straight.

The form *adolphæi* is dark brown, the collar yellow, the fore wing suffused with grey; *flavicollis* is yellowish grey-brown; *collaris* paler and redder.

Hab. Nilgiri plateau. *Exp.*, ♂ 60–72, ♀ 75 millim.

72. **Eupterote diffusa,** *Wlk. Cat.* xxxii, p. 374; *Moore, Lep. Ceyl.* ii, pl 135, fig. 2; *C. & S.* no. 1382.

♂. Differs from *mollifera* in having the head brown; the thorax, abdomen, and wings vary in colour from greyish white to dull ochreous brown; the postmedial line single, curved on both wings, and much nearer the margin; the waved lines fairly distinct or obsolescent, as are the spots and outer waved line; cilia brown.

Hab. Ceylon. *Exp.* 66 millim.

73. **Eupterote primularis,** *Moore, Trans. Ent. Soc.* 1884, p. 371; *C. & S.* no. 1421.

♂. Differs from *diffusa* in being very pale primrose-yellow; both wings without waved lines near the base; a well-marked medial line, which is curved and waved on the fore wing, waved

on the hind wing. Fore wing with the postmedial line yellow-brown, straight, oblique, and arising from the costa near the apex; the two spots towards inner margin prominent; the outer line more or less prominent; the costa yellow-brown. Hind wing with the postmedial line curved, the spots and outer waved line somewhat indistinct.

Hab. Nilgiris, S. slopes, 3000 feet. *Exp.* 58 millim.

74. **Eupterote geminata**, *Wlk. Cat.* iv, p. 907; *Moore, Lep. Ceyl.* ii, pl. 137, figs. 2, 2 *a*; *C. & S.* no. 1419.
? Phalæna petosiris, *Cram. Pap. Exot.* iv, pl. 397 D; *C. & S.* no. 1402.
Dreata anada, *Moore, Lep. E. I. C.* pl. 365; *C. & S.* no. 1370.
Brachytera phalænaria, *Feld. Reis. Nov.* pl. 95, fig. 1; *C. & S.* no. 1420.
Horanpella placida, *Moore, Lep. Ceyl.* ii, p. 143, pl. 137, figs. 1, 1 *a*; *C. & S.* no. 1332.
Dreata lineata, *Wlk. Cat.* iv, p. 907; *C. & S.* no. 1430.

♂. Fore wing with a single medial indistinct slightly curved line; both wings with a prominent postmedial slightly curved line.

♀. Duller, the medial line of fore wing absent.

Typical *geminata* is bright ochreous yellow; one or two prominent dark spots below the costa of fore wing and two towards inner margin. Hind wing with similar but less prominent spots. In *anada* and *phalænaria* these spots are absent; *placida* is suffused with dull brown, the spots present, but not prominent; one ♀ has the head and thorax fuscous; *lineata* has the spots absent.

Hab. N. India; Canara; Ceylon. *Exp.*, ♂ 58, ♀ 66–80 millim.

75. **Eupterote minor**, *Moore*; *Cotes, Museum Notes, ined.*

♂. Differs from *geminata* in the two lines of the fore wing being more erect and curved below the costa; the two lines of the hind wing more curved and less oblique. Head yellowish.

The colour varies from pale dull ochreous to pale reddish, the latter with traces of the submarginal line to both wings.

♀. Dark red-brown; the lines of both wings further apart; a dark spot on the inner line of fore wing at end of cell; cilia grey at tips.

Hab. Shwebo, Burma. *Exp.*, ♂ 46–55, ♀ 50 millim.

76. **Eupterote lineosa**, *Wlk. Cat.* vi, p. 1440; *Butl. Ill. Het.* v, pl. 96, fig. 9; *C. & S.* no. 1418.
Murlida fraterna, *Moore, Trans. Ent. Soc.* 1884, p. 371; *C. & S.* no. 1417.

Fore wing with the postmedial line single, almost straight, and oblique, with at most five waved lines before it; the two spots beyond it towards costa and two towards inner margin generally present; the outer waved line indistinct.

The colour varies from pale primrose-yellow to bright ochreous yellow.

Hab. Nepal; Sikhim; Nilgiris; Ceylon. *Exp.*, ♂ 70–82, ♀ 85–90 millim.

77. **Eupterote undans**, *Wlk. Cat.* iv, p. 905; *Butl. Ill. Het.* v, pl. 97, fig. 6; *C. & S.* no. 1409.

♂. Head, thorax, and abdomen reddish brown; wings grey-brown irrorated with dark scales. Fore wing with six highly waved lines. Hind wing with three nearly straight indistinct lines and a highly waved submarginal line.

Hab. Mahableshwar; Bangalore; Assam; Nilgiris. *Exp.* 60 millim.

78. **Eupterote testacea**, *Wlk. Cat.* iv, p. 906; *Butl. Ill. Het.* v, pl. 97, fig. 1; *C. & S.* no. 1416.

Head and thorax fulvous yellow; abdomen and wings pale ochreous yellow. Fore wing crossed by two antemedial and two medial, nearly straight indistinct dark lines; a double postmedial similar line, the inner line well defined; a waved submarginal line; the basal and outer areas irrorated with dark scales. Hind wing with an antemedial line; a double postmedial line; a diffused submarginal curved line.

Hab. Cachar; Sylhet; Khásis; Bernardmyo, Burma. *Exp.*, ♂ 68, ♀ 86 millim.

79. **Eupterote translata**, *Swinh. P. Z. S.* 1885, p. 304, pl. 21, fig. 5; *C. & S.* no. 1434.

♂. Differs from *testacea* in being pale ochreous brown. Fore wing with antemedial, medial, and postmedial indistinct lines; the prominent postmedial line single; the submarginal line nearer the margin. Hind wing without the antemedial line; the postmedial line single and straighter; the submarginal line better defined.

Hab. Satara; Poona; Nilgiris. *Exp.* 54 millim.

80. **Eupterote flavida**, *Moore, Trans. Ent. Soc.* 1884, p. 372; *C. & S.* no. 1428.

Messata acinea, *Swinh. Trans. Ent. Soc.* 1891, p. 141.

Colour yellow, in typical *flavida* with a slight ruddy tinge. Fore wing crossed by three slightly curved oblique bands of blackish scales from near the apex to inner margin, towards which they diverge; the middle band often obsolete.

Hab. N. Canara; Khandála; Nilgiris. *Exp.* 74 millim.

81. **Eupterote plumipes**, *Wlk. Cat.* iv, p. 907; *C. & S.* no. 1431; *Moore, Lep. Ceyl.* ii, pl. 133, fig. 5.

Messata rubiginosa, *Wlk. Cat.* v, p. 1108.

Messata quadrifasciata, *Moore, P. Z. S.* 1879, p. 409; *C. & S.* no. 1432.

Messata similis, *Moore, Lep. Ceyl.* ii, p. 139, pl. 133, fig. 4; *C. & S.* no. 1433.

♂. Fore wing with three indistinct waved medial bands; an oblique dark band from apex to centre of inner margin; a submarginal indistinct band. Hind wing with traces of medial and submarginal bands in some specimens.

♀. Fore wing with the medial waved lines and submarginal line very indistinct.

The colour in typical *plumipes* is reddish brown, in the female very dark vinous brown; in the form *quadrifasciata* brownish ochreous, in *similis* and *æenescens* yellow.

Hab. Ceylon. *Exp.*, ♂ 64, ♀ 70 millim.

82. **Eupterote vialis**, *Moore, P. Z. S.* 1879, p. 409; *id. Lep. Ceyl.* ii, pl. 134, fig. 4; *C. & S.* no. 1436.

♂. Differs from *plumipes* in the hairs of the thorax being tipped with yellow. Fore wing without the medial and submarginal lines; the oblique band inwardly dark brown, outwardly yellow.

Hab. Ceylon. *Exp.* 71 millim.

Sect. II. Female with patches of raised scales at outer angle of fore wing on underside and at apex of hind wing on upperside.

83. **Eupterote citrina**, *Wlk. Cat.* iv, p. 905; *C. & S.* no. 1376.

♂. Antennæ rufous; head, collar, and prothorax fuscous; meso- and metathorax pale yellowish white; abdomen pale reddish brown clothed with yellow hair; wings uniform pale yellowish white.

♀. Antennæ, head, and thorax yellowish white; the patches of raised scales ochreous.

Hab. Deccan; Bombay; Central India, and ? Sikhim. *Exp.*, ♂ 84, ♀ 50–86 millim.

84. **Eupterote unicolor**, *Hmpsn. Ill. Het.* viii, p. 65, pl. 142, fig. 8.

♂. Head, thorax, and abdomen red-brown. Wings vinous red-brown; an almost obsolete postmedial line, curved below the costa, and with traces of some spots beyond it; the abdomen and costa of hind wing sometimes yellowish.

♀. Paler; fore wing with antemedial and medial lines curved below the costa; both wings with the postmedial line, but no spots beyond; the patches of raised scales vinous.

Hab. Madras; Nilgiris. *Exp.*, ♂ 72, ♀ 68 millim.

Genus **NISAGA**.

Nisaga, *Wlk. Cat.* iv, p. 885 (1855).

Type, *N. simplex*, Wlk.
Range. Assam and throughout S. India.

Palpi very thickly clothed with hair, slight and porrect. Antennæ with the branches very long in male. Fore wing short and broad, the outer margin rounded; the discocellulars angled below vein 5, which is given off near the angle of cell, 11 arising some way before veins 7, 8, 9, which are stalked. Hind wing with the discocellulars angled below vein 5; veins 6 and 7 stalked.

85. **Nisaga simplex,** *Wlk. Cat.* iv, p. 885; *C. & S.* no. 1438.
Nisaga modesta, *Moore, Trans. Ent. Soc.* 1884, p. 373; *C. & S.* no. 1437.

♂. Head, thorax, and abdomen reddish brown. Fore wing whitish, yellowish, or reddish brown; the interspaces with very

Fig. 36.—*Nisaga simplex*, ♂. 1/1.

broad dark red-brown streaks, which may be partially or (in the form *modesta*) quite obsolete.

Hab. Khási Hills; throughout S. India. *Exp.* 42–50 millim.

Genus **SANGATISSA.**

Sangatissa, *Moore, Lep. Ceyl.* ii, p. 143 (1883).

Type, *S. subcurvifera*, Wlk.

Range. N.W. Himalayas; throughout S. India and Ceylon; Yunnan.

Palpi slight, porrect, and thickly clothed with hair. Antennæ with the branches very long in the male, short in female. Fore wing produced at apex, the outer angle rounded; the discocellulars angled below vein 5, which is given off just below the angle; vein 6 stalked with 7, 8, 9, or from the angle, vein 11 arising some way before the angle. Hind wing narrow; the discocellulars angled below vein 5; veins 6 and 7 stalked.

86. **Sangatissa subcurvifera,** *Wlk. Cat.* xxxii, p. 375; *C. & S.* no. 1424; *Moore, Lep. Ceyl.* ii, pl. 134, fig. 6.
Sangatissa albipars, *Moore, Trans. Ent. Soc.* 1884, p. 372; *C. & S.* no. 1422.

Dreata triseriata, *Butl. P. Z. S.* 1875, p. 393; *C. & S.* no. 1425.
Dreata citrinula, *Wlk. Cat.* xxxii, p. 376; *C. & S.* no. 1423.
Nisaga teta, *Swinh. Trans. Ent. Soc.* 1891, p. 140.

♂. Head, thorax, and abdomen pale brown. Wings whitish brown. Fore wing with three blackish curved bands—one from the

Fig. 37.—*Sangatissa subcurvifera*, ♂. $\frac{1}{1}$.

base to near apex, one from base of inner margin to apex, the other on outer margin. Hind wing with submarginal and marginal bands; all these bands are interrupted at the veins.

♀ browner.

The variety *albipars* has the bands obsolescent; the form *triseriata*, from the Pulney Hills, is much yellower incolour; whilst *citrinula*=*teta* is yellow, with the bands obsolete except a trace of the upper one.

Hab. N.W. Himalayas; throughout S. India and Ceylon; Yunnan. *Exp.* 60 millim.

Genus **CNETHOCAMPA.**

Cnethocampa, *Steph. Ill. Brit. Ent., Haust.* ii, p. 46 (1829).

Type, *C. processionea*, Linn., from Europe.

Range. Europe; N. India.

Palpi minute, hairy, and porrect; frons with a large corneous ridge hollowed out in front; antennæ bipectinated in both sexes, the branches stiff and longer in the male than in the female; legs hairy, mid and hind tibiæ with minute terminal pairs of spurs; abdomen of female with a large anal tuft. Fore wing with the apex rather produced upwards; vein 5 from the centre of discocellulars; 6 from angle of cell; 7, 8, 9, 10 stalked. Hind wing with veins 3 and 4 stalked, 5 from the centre of discocellulars, 6 and 7 stalked.

87. **Cnethocampa cheela,** *Moore, P. Z. S.* 1883, p. 18, pl. v, figs. 3, 3 *a*; *C. & S.* no. 1045.

♂. Head, thorax, and abdomen pale and dark brown; antennæ

ochreous. Fore wing grey, with a few dark hairs; subbasal, medial, and postmedial slightly irregular black lines edged with orange,

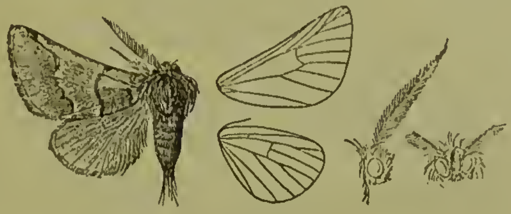

Fig. 38.—*Cnethocampa checla*, ♂. $\frac{1}{1}$.

the medial line externally, the other two internally. Hind wing pale grey.

♀. Abdomen red-brown, the anal tuft dark brown.

Hab. Simla. *Exp.*, ♂ 34, ♀ 38 millim.

The following species formerly recorded as Indian are omitted.

Apha lanuginosa, Wlk., C. & S. no. 1343. Type lost, description unrecognizable.

Messata tristis, Feld., C. & S. no. 1435, is from *S. Africa*.

Family SPHINGIDÆ.

Diurnal or crepuscular Lepidoptera with powerful flight, which feed on the wing; characterized by the antennæ being gradually thickened into a club, which is pointed at the tip, and nearly always hooked, with a small tuft of hair at the extremity: in the males of nearly all the genera there are bands of cilia on the under surface. Palpi very thickly scaled, the third joint minute and buried in the scales. Legs strong, with well-developed spurs and spined tarsi. Fore wing elongated and narrow; the subcostals very close to the costa; vein 1 forked at base. Hind wing small; costal nervure arising free, with a bar between it and subcostals; two internal veins. The subfamilies and genera are very closely allied and difficult to define; the shape and coloration are eminently variable.

Larva smooth, nearly always with a horn on 11th somite.

Pupa free in the earth.

Key to the Subfamilies.

a. *Larva*: tapering to head, the thoracic somites retractile; horn long, curved and tuberculate.

Imago: the proboscis very short and thick. 1. *Acherontiinæ*.

b. *Larva*: rugose, tapering to head, which is produced upwards; horn straight.
Imago: the proboscis very short and slight. 2. *Smerinthinæ.*
c. *Imago*: the proboscis of moderate length.
a′. *Larva*: tapering to head, which is larger and rounded; horn straight.
Imago: the apex of fore wing much produced; ♂ with small lateral expansions to abdomen . . . . 3. *Ambulycinæ.*
b′. *Larva*: the thoracic somites retractile, the 3rd more or less swollen; horn variable.
Imago: apex of fore wing but slightly produced; ♂ with small lateral expansions to abdomen . . . . 4. *Chærocampinæ.*
d. *Larva*: the thoracic somites non-retractile, curved downwards in repose.
Imago: the proboscis very long; abdomen conical in both sexes . . . . 5 *Sphinginæ.*
e. *Larva*: the thoracic somites tapering to head, which is small; horn long, curved, and smooth.
Imago: abdomen with a medial pair of lateral tufts of hair on last segment more or less developed in both sexes . . . . 6. *Macroglossinæ.*

Subfamily ACHERONTIINÆ.

Larva thick, tapering to head, the thoracic somites retractile; the horn more or less recurved at the tip and tuberculate.

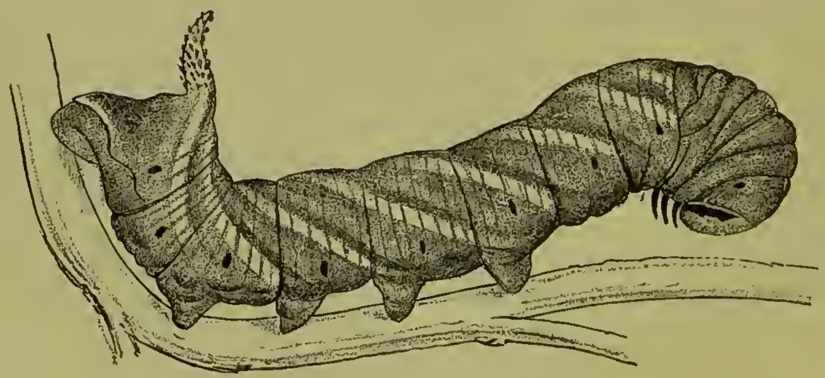

Fig. 39.—Larva of *Acherontia styx*. (From Moore, Lep. Ceyl. pl. 76.)

Pupa without external sheath for proboscis.
Imago with the proboscis short and thick; the antennæ thick at base.

Genus ACHERONTIA.

Acherontia, *Ochsen. Schmett. Eur.* iv, p. 44 (1816).

Type, *A. atropos*, L., from Europe.

Range. India; Java; China; Japan; Philippines; Europe; Africa.

Palpi closely appressed to the face and but moderately thick; legs short and thick. Hind wing with the subcostals stalked.

88. **Acherontia styx,** *Westw. Cab. Or. Ent.* p. 88, pl. 42, fig. 3; *C. & S.* no. 164; *Moore, Lep. Ceyl.* ii, pl. 76, figs. 1, 1 *a–c* (pupa and larva).
Acherontia medusa, *Butl. Trans. Z. S.* ix, p. 597; *C. & S.* no. 165.

Head brown; thorax dark blue-grey, with black lateral lines which meet behind; the centre of the thorax occupied by a fulvous "skull-mark" with two black "eyes"; abdomen yellow, with blackish segmental bands and a blue-grey stripe down the vertex. Fore wing mottled with various shades of brown, fulvous, and grey; three indistinct antemedial lines; a pale spot in the end of cell; two lunulate curved postmedial lines. Hind wing yellow

Fig. 40.—*Acherontia styx*, ♂. 1/1.

with a postmedial black band not reaching the costa or anal angle; a similar submarginal maculate band.

Differs from *A. atropos* in having two medial bands on the underside of the fore wing instead of one, and no bands on the underside of abdomen.

Larva green, with oblique lateral yellow streaks on somites 4–10.

Hab. Throughout India and Ceylon; Asia Minor; China; Siam; Borneo; Celebes; Timor; Philippines; Japan. *Exp.* 106 millim.

89. **Acherontia lachesis,** *Fabr. Ent. Syst. Suppl.* p. 434.
Acherontia morta, *Hübn. Verz.* p. 140; *C. & S.* no. 166; *Moore, Lep. Ceyl.* ii, pl. 77, figs. 1, 1 *a–c* (larva and pupa).
Acherontia satanas, *Boisd. Sp. Gén.* pl. 16, fig. 1.
Acherontia lethe, *Westw. Cab. Or. Ent.* p. 87, pl. 42, fig. 2.

Larger and much darker than *styx*; the segmental bands and grey stripe occupying so much of the abdomen that only small patches of yellow are left. Hind wing with a large black patch at the base; the medial and postmedial bands so broad that only narrow bands of yellow remain. Underside of abdomen banded with black; and the wings banded with black and with a spot in the cell of each.

Larva differs from *styx* in having blue streaks above the yellow ones; before pupating it turns brown and the oblique streaks disappear.

Hab. Throughout India and Ceylon; Siam; Penang; Java; China. *Exp.* 92–134 millim.

Subfamily SMERINTHINÆ.

Larva rugose, tapering to the head, which is more or less produced to a point above; horn straight.

Imago with the proboscis very short and thin; head projecting but slightly forward.

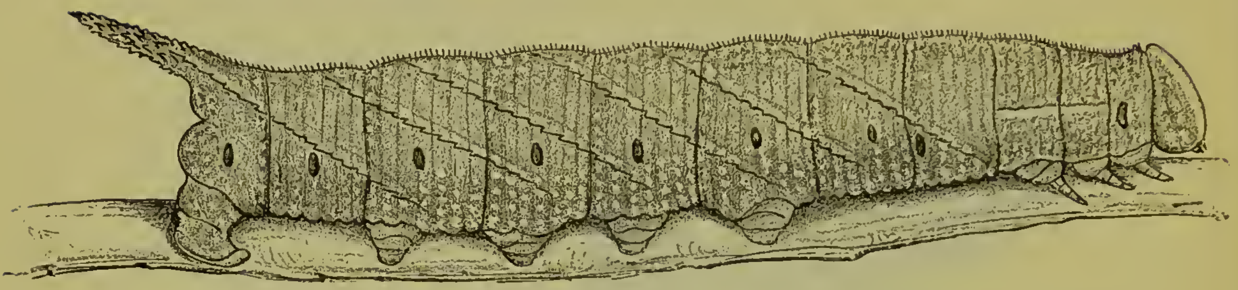

Fig. 41.—Larva of *Polyptychus dyras*. (From Moore, Lep. Ceyl. pl. 78.)

Key to the Genera.

a. Fore wing with outer margin crenulate or angled.
  a'. The apex acute.
    *a*². Palpi rounded .... 1. Polyptychus, p. 68.
    *b*². Palpi thin and flattened .... 2. Cypa, p. 71.
  b'. Fore wing with apex rounded, spatulate scales on thorax and abdomen; ♂ with claspers highly developed .... 4. Langia, p. 73.
b. Fore wing with outer margin evenly rounded.
  a'. Apex acute; spurs long .... 5. Leucophlebia, p. 74.
  b'. Apex truncate; spurs short, one pair on hind tibia .... 3. Daphnusa, p. 72.

Genus POLYPTYCHUS.

Polyptychus, *Hübn. Verz.* p. 141 (1818).
Marumba, *Moore, Lep. Ceyl.* ii. p. 8 (1882).

Type, *P. dentatus*, Cram.

Range. Japan; China; throughout India and Ceylon; Java; Madagascar; S. Africa; United States.

Palpi rather slight; legs with the spurs short; wings with the outer margins crenulate, varying in amount individually; veins 6 and 7 of hind wing from end of cell or stalked.

90. **Polyptychus dentatus**, *Cram. Pap. Exot.* ii, p. 42, pl. 125 G; *C. & S.* no. 132; *Butl. Tr. Zool. Soc.* ix, pl. 91, fig. 10 (larva).
Sphinx timesius, *Stoll, Suppl. Cram. Pap. Exot.* p. 172; *C. & S.* no. 133.
Polyptychus trilineatus, *Moore, P. Z. S.* 1888, p. 390; *Butl. Ill. Het.* vii, pl. 121, fig. 4; *C. & S.* no. 133 A.
Sphinx modesta, *Fabr. Ent. Syst.* iii, p. 356.

Grey; fore wing with a diffused medial band; oblique antemedial, postmedial, and submarginal lines, the last curved in some specimens; between the postmedial and submarginal lines is an indistinct waved line; apical area clouded. Hind wing with a waved postmedial line. Cilia chequered brown and white. Underside: fore wing with submarginal, hind wing with medial and submarginal lines.

The form *timesius* is darker, with the waved line on the fore wing obsolescent. In the form *trilineatus* the postmedial line of the fore wing is also obsolete, and on the underside only the submarginal line on each wing is present.

Larva green, with yellow marks down the back outlined in pink; oblique dark lateral stripes; horn yellow.

Hab. Bombay; Bengal (*dentatus*); E. Himalayas (*timesius*); N.W. Himalayas (*trilineatus*). *Exp.*, ♂ 90, ♀ 120 millim.

91. **Polyptychus dyras**, *Wlk. Cat.* viii, p. 250; *C. & S.* no 140; *Moore, Lep. Ceyl.* ii, pl. 78, figs. 1, 1 *a–c* (larva and pupa).
Triptogon cristata, *Butl. P. Z. S.* 1875, p. 253; *C. & S.* no. 136.
Triptogon gigas, *Butl. P. Z. S.* 1875, p. 253; *C. & S.* no. 137.
Triptogon albicans, *Butl. P. Z. S.* 1875, p. 254; *C. & S.* no. 139.
Triptogon ceylanica, *Butl. P. Z. S.* 1875, p. 255; *C. & S.* no. 141.
Triptogon silhetensis, *Butl. P. Z. S.* 1875, p. 255; *C. & S.* no. 142.
Triptogon oriens, *Butl. P. Z. S.* 1875, p. 255; *C. & S.* no. 143.
Triptogon massurensis, *Butl. P. Z. S.* 1875, p. 256; *C. & S.* no. 144.
Triptogon fuscescens, *Butl. P. Z. S.* 1875, p. 256; *C. & S.* no. 145.
Treptogon piceipennis, *Butl. A. M. N. H.* (4) xx, p. 393.
Smerinthus sperchius, *Mén. En. Corp. An. Mus. Acad. Sci. Petrop.* ii, p. 137.
Triptogon andamana, *Moore, P. Z. S.* 1877, p. 595; *C. & S.* no. 148.
Triptogon rectilinea, *Moore, P. Z. S.* 1879, p. 388; *C. & S.* no. 149.
Smerinthus indicus, *Wlk. Cat.* viii, p. 254; *C. & S.* no. 150.
Triptogon sinensis, *Butl. P. Z. S.* 1875, p. 254.
Triptogon javanica, *Butl. P. Z. S.* 1875, p. 254.

Pale brown; a dark line, which is obsolete in some specimens, from head to end of abdomen. Fore wing with a subbasal line; three antemedial lines converging towards inner margin; two

oblique slightly bent postmedial lines, the outer one obsolescent; another postmedial line, curved from the costa to vein 2, then recurved upwards and inwards and enclosing a red-brown spot surrounded by an indistinct line; two curved submarginal lines.

Fig. 42.—*Polyptychus dyras*, ♂. ½.

Hind wing red-brown, the area at anal angle paler, with two red-brown spots on it. Underside of fore wing with only the lines on the outer half present; hind wing with two postmedial straight lines and two submarginal curved lines.

The darkest form is *cristata* from Sikhim, in which both wings are suffused with brown and the lines on the fore wing are straighter and more oblique, the uppermost of the anal spots on the hind wing is obsolete, as also is the outermost of the two postmedial lines on the underside of both wings; in *piceipennis*, from Japan, the fore wings have an olive tinge and the lines are more bent, the hind wing is dark, but both anal spots are present as also traces of the outer postmedial line; *rectilinea* is a small dark form with the spots at anal angle conjoined; *ceylanica* = *fuscescens* = *oriens* = *silhetensis* is larger than the last and rather paler; in *sperchius*, from Japan, the fore wing is clouded in parts; *gigas* is a large form, the fore wing pale, the hind wing dark; *dyras* = *sinensis* = *javanica* is again rather paler and smaller; *indicus* is a small pale starved specimen; the palest form *albicans*, from the N.W. Himalayas, has the spots at the anal angle, and in some specimens the lines, almost obsolete.

Exp. 94–114 millim., (*gigas*) 150 millim., (*indicus*) 60 millim.

Larva blue-green with short white granular spines; lateral oblique streaks on 5th–10th somites; 4th somite with a black-ringed white ocellus; horn yellow.

Hab. N.W. and E. Himalayas; Assam; Canara; Ceylon; Andamans; Japan; China; Siam; Java.

92. **Polyptychus spectabilis,** *Butl. P. Z. S.* 1875, p. 256; *Trans. Zool. Soc.* ix, pl. 93, fig. 1; *C. & S.* no. 147.

♂. Differs from *dyras* in the fore wing being variegated with different shades of brown and purplish grey; the lines are similar except that there is a medial line present enclosing between it and the first postmedial line a bright coloured patch very variable in extent. Underside with the area before the apex of the fore wing suffused with pink and grey; the apex and outer angle fulvous yellow instead of chocolate; hind wing suffused with pink and grey, the anal angle yellow.

Hab. Sikhim. *Exp.* 94–120 millim.

Genus CYPA.

Cypa, *Wlk. Cat.* xxxi, p. 41 (1864).

Type, *C. ferruginea*, Wlk.

Range. Sikhim; Tavoy; Ceylon.

The palpi flattened and thin; hind wing with the subcostals on a long stalk.

93. **Cypa decorata,** *Moore, P. Z. S.* 1872, p. 568; *C. & S.* no. 146.

♀. Dark olive-brown. Fore wing with the outer margin highly excised between veins 4 and 7, and much angulated towards outer angle; suffused with pale pink; a large irregular medial brown patch bordered with pink on the costa and partly including a pale reniform spot, beneath which is a dark brown "inverted-comma" shaped mark; two curved postmedial pink lines, the inner one waved near the inner margin; some diffused brown streaks near outer angle; a triangular brown-edged patch on the costa before the apex, with a short white streak below it. Hind wing with a broad black and narrow pink streak near anal angle.

Hab. Sikhim. *Exp.* 72 millim.

94. **Cypa decolor,** *Wlk. Cat.* viii, p. 255; *C. & S.* no. 131.

Cypa incongruens, *Butl. Ill. Het.* v, p. 12, pl. 80, figs. 8, 9; *C. & S.* no. 77.

Fig. 43.
Cypa decolor, ♂. 1/1.

Fore wing highly angled and crenulate. Dark red-brown; the fore wing suffused with darker patches, especially at the middle; a dark speck at end of cell, and two indistinct submarginal waved lines. Hind wing with the cilia white towards anal angle, which is less produced in the female than in the male.

Hab. Sikhim; Tavoy. *Exp.* 62 millim.

95. **Cypa ferruginea,** *Wlk. Cat.* xxxi, p. 42; *Moore, Lep. Ceyl.* ii, pl. 79, fig. 3; *C. & S.* no. 78.

Fore wing with the outer margin hardly angulated or crenulate and more uniform in colour.

C. decolor and *ferruginea* may prove to be varieties of the same species.

Hab. Ceylon. *Exp.* ♀ 60 millim.

96. **Cypa floralis,** *Butl. Trans. Z. S.* ix, p. 639; *Ill. Het.* v, pl. 81, fig. 1; *C. & S.* no. 138.

Antennæ pink; head and thorax green; abdomen olive. Fore wing with outer margin evenly curved, green with a pink patch on base of inner margin; an oblique postmedial dark line; some brown on the nervules beyond the cell and at outer angle. Hind wing bright pink; the outer margin broadly olive; cilia whitish towards anal angle. Underside green; fore wing with the whole basal half except the costa pink, an indistinct line beyond the cell from the costa to vein 5, an oblique white and green postmedial line, an indistinct submarginal lunulate line; hind wing crossed by three oblique white and green lines.

Hab. Sikhim. *Exp.* ♀ 114 millim.

Genus **DAPHNUSA.**

Daphnusa, *Wlk. Cat.* viii, p. 237 (1856).

Type, *D. ocellaris*, Wlk.

Range. Sikhim; Burma; Borneo.

The apex of fore wing more rounded and truncate; the outer margin straight and but slightly oblique; hind wing with the apex rounded; the anal angle with a rounded lobe; the outer margin not crenulate; the tuft on vertex of head highly developed. Spurs very short, hind tibiæ with only the terminal pair.

SECT. I. Veins 6 and 7 of hind wing on a long footstalk.

97. **Daphnusa ocellaris,** *Wlk. Cat.* viii, p. 238.
Daphnusa orbifera, *Wlk. Journ. Linn. Soc.* vi, p. 85.

♂. Pale reddish brown or dark olive-brown; collar and vertex of thorax darker. Fore wing with two waved subbasal lines angled outwards at vein 1, where they join an oblique antemedial band; a crenulated postmedial band with a large pale spot on it at inner margin, the inner side having some red dentate marks on it; two crenulated submarginal lines; a chestnut patch on the costa before apex. Hind wing red-brown, with some bright chestnut lines above anal angle. Underside: fore wing with

two crenulated submarginal lines; hind wing with curved medial and postmedial lines.

♀. Darker brown; a dark brown band on metathorax.

Hab. Borneo; Bassein, Burma. *Exp.*, ♂ 80–92, ♀ 112 millim.

SECT. II. Veins 6 and 7 of hind wing from end of cell.

98. **Daphnusa porphyria**, *Butl. Trans. Z. S.* ix, p. 640; *C. & S.* no. 152.

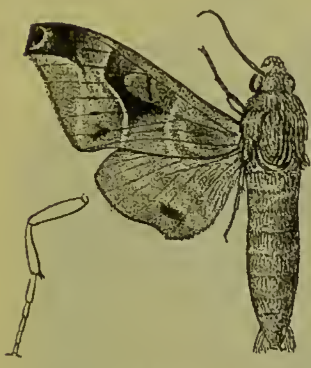

Fig. 44.
Daphnusa porphyria, ♂. 1/1.

Brown; fore wing variegated with ferruginous and olive-brown; a dark patch below the end of the cell; another at apex enclosed by a white lunule with a dark streak below it; a spot near outer angle. Hind wing brown, with a dark spot above the lobe at anal angle. Underside with a submarginal pale line to both wings; the apex of fore wing dark, with the apical lunule as above.

Hab. Sikhim. *Exp.* ♂ 60 millim.

Genus LANGIA.

Langia, *Moore, P. Z. S.* 1872, p. 567.

Type, *L. zenzeroides*, Moore.

Range. Himalayas and Khási Hills.

Palpi rounded. Fore wing with the apex more rounded; the outer margin much more crenulate towards outer angle; the thorax, abdomen, and parts of fore wing covered with peculiar spatulate scales, giving a very rough appearance; male with the claspers extremely developed; subcostals of hind wing from end of cell.

99. **Langia zenzeroides**, *Moore, P. Z. S.* 1872, p. 567; *C. & S.* no. 134.
Langia khasiana, *Moore, P. Z. S.* 1872, p. 568; *C. & S.* no. 135.

Head pale; thorax—the vertex leaden with some ochreous lines, the sides dark brown; metathorax covered with light and dark brown spatulate scales, as is also the abdomen. Fore wing with the costal area leaden grey, whitish below the cell, dark grey towards inner and outer margins; three very oblique dark lines from the apex to near centre of inner margin; a whitish submarginal line; outer margin with light and dark lunules in the crenulations. Hind wing brown, with some dark brown and whitish lines near anal angle; a marginal dark line; cilia whitish towards anal angle.

The form *khasiana* is slightly darker.

Larva. Green, covered with raised tubercles; a subdorsal line of tubercles from the head to the horn.

Hab. Simla; Dharmsála; Sikhim; Khásis. *Exp.* 126–160 millim.

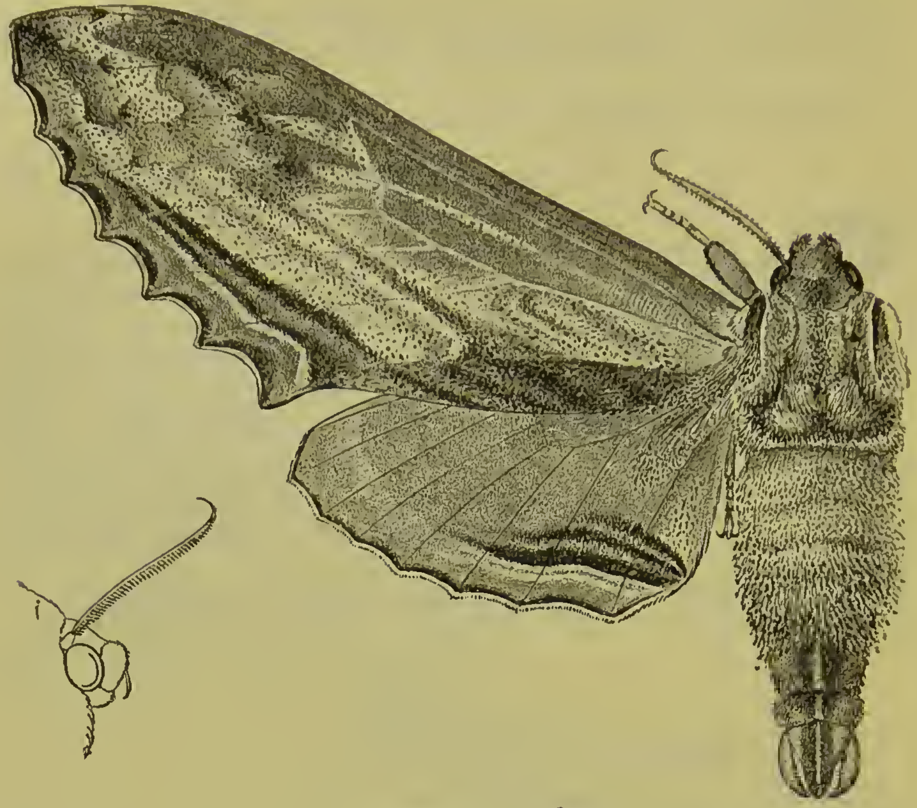

Fig. 45.—*Langia zenzeroides*, ♂. ½.

Genus LEUCOPHLEBIA.

Leucophlebia, *Westw. Cab. Or. Ent.* p. 46 (1848).

Type, *L. lineata*, Westw.

Range. Throughout India and Ceylon; Java; China.

Fore wing with the apex hardly produced; the outer margin evenly rounded. Palpi rounded.

100. **Leucophlebia lineata,** *Westw. Cab. Or. Ent.* p. 46, pl. 22, fig. 2 *C. & S.* no. 153; *Moore, Lep. Mus. E. I. C.* pl. 8, fig. 5 (larva). Leucophlebia rosacea, *Butl. P. Z. S.* 1875, p. 15, pl. 2, fig. 4; *C. & S.* no. 154.

Fig. 46.
Leucophlebia lineata, ♂. ½.

Palpi and frons brown; antennæ ochreous; vertex of head and sides of thorax and abdomen pale pink; a brownish ochreous stripe on vertex of thorax and abdomen. Fore wing bright pink; a yellow stripe from the base of cell to apex, widest beyond the cell; a short narrow yellow streak in the interno-median interspace from the base; veins 2, 3, and 4 white, with some diffused fuscous below them. Hind wing tawny. Cilia yellowish white.

The form *rosacea*, from S. India and Ceylon, is rather smaller and darker than typical *lineata*.

Larva green covered with tubercles; a broad white lateral stripe; head white, with a pink streak on gulæ; horn and legs pink.

Hab. Chekiang; Nepal; Cachar; S. India; Ceylon; Java. *Exp.*, ♂ 70, ♀ 80 millim.

101. **Leucophlebia emittens**, *Wlk. Cat.* xxxv, p. 1858; *C. & S.* no. 156.
Leucophlebia bicolor, *Butl. P. Z. S.* 1875, p. 16; *id. Ill. Het.* v, pl. 80, fig. 6; *C. & S.* no. 155.
Leucophlebia damascena, *Butl. P. Z. S.* 1875, p. 392; *id. Ill. Het.* v, pl. 80, fig. 7; *C. & S.* no. 157.

Differs from *lineata* in the palpi and frons being pink; fore wing with the yellow streak broader and extending below the cell; veins 2, 3, and 4 yellow, without fuscous below them; outer margin of hind wing narrowly pink; thorax with a narrow tawny streak on vertex.

The type of *emittens* has all the pink parts dusky brown, but as the pink reappears below it is probably a discoloured specimen; the N.W. Himalayan form *bicolor* is paler than the form *damascena*.

Hab. N.W. Himalayas; Sikhim; Bombay; Central India; Burma. *Exp.* 55-65 millim.

Subfamily AMBULYCINÆ.

Larva. Anterior segments tapering slightly towards the head, which is larger and rounded; horn oblique, not curved.

Imago. Proboscis moderately long; antennæ slender; abdomen of male with lateral angular expansions.

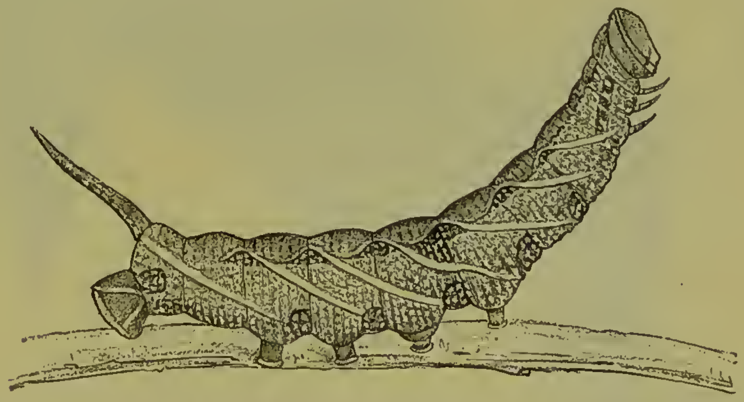

Fig. 47.—Larva of *Ambulyx semifervens*. (From Moore, Lep. Ceyl pl. 80.)

Key to the Genera.

a. Fore wing with apex rounded and obtuse	1. Calymnia, p. 76.
b. Fore wing with apex acute	2. Ambulyx, p. 77.

Genus CALYMNIA.

Calymnia, *Wlk. Cat.* viii, p. 123 (1856).

Type, *C. panopus*, Cram.
Range. India; Ceylon; Java.

Antennæ gradually diminishing to a long hook. Fore wing long, the costa curved, apex rounded and obtuse, the outer margin oblique and excised; the subcostals of hind wing from the angle of cell; the discocellulars but slightly angled.

102. **Calymnia panopus,** *Cram. Pap. Exot.* iii, p. 50; *Moore, Lep. Ceyl.* ii, pl. 81, figs. 1, 1 *a*, 1 *b* (pupa and larva); *C. & S.* no. 186.
Calymnia pavonica, *Moore, P. Z. S.* 1877, p. 596; *C. & S.* no. 187.

Head, thorax, and terminal segments of abdomen golden brown; the proximal segments pale. Fore wing purplish flesh-colour; some brown waved lines near the base; then an oblique band; some waved brown lines from the costa to lower angle of cell; an oblique postmedial band; a highly waved and irregular whitish submarginal line; a dark ocellus near outer angle. Hind wing flesh-colour, the outer area brown; the disk suffused with pink; antemedial, medial, and two postmedial lines, the last two angled below the costa. Underside much mottled with yellow.

Fig. 48.—*Calymnia panopus*, ♂. 1/1.

The Andaman and Burmese form *pavonica* is much darker, especially the basal segments of the abdomen.

Larva grey and granulose, with a subdorsal yellow spotted line from the head to the horn; the 4th to 10th somites with oblique yellow lateral stripes; horn tuberculate.

Hab. Throughout India, Ceylon, Burma, and the Andamans. *Exp.*, ♂ 132, ♀ 134 millim.

Genus AMBULYX.

Ambulyx, *Westw. Cab. Or. Ent.* p. 61 (1848).
Dahira, *Moore, P. Z. S.* 1888, p. 390.
Clanis, *Hübn. Verz.* p. 138 (1818), gen. non descr.

Type, *A. substrigilis*, Westw.
Range. India; Japan; Africa; W. Indies; S. America.
The apex of fore wing more acute, the outer margin evenly curved.

103. **Ambulyx substrigilis**, *Westw. Cab. Or. Ent.* p. 61, pl. 30, fig. 2; *C. & S.* no. 118.
Ambulyx schauffelbergii, *Brem. Schmett. Nörd. Chin.* p. 12.
Ambulyx maculifera, *Wlk. Cat.* xxxv, p. 1851; *Butl. Ill. Het.* v, pl. 80, fig. 3; *C. & S.* no. 119.
Ambulyx consanguis, *Butl. Ill. Het.* v, p. 11, pl. 80, fig. 4; *C. & S.* no. 120.
Ambulyx liturata, *Butl. P. Z. S.* 1875, p. 250; *id. Tr. Zool. Soc.* ix, pl. 91, figs. 2 & 3 (larva and pupa).
Ambulyx rhodoptera, *Butl. P. Z. S.* 1875, p. 251; *id. Tr. Zool. Soc.* ix, pl. 93, fig. 8; *C. & S.* no. 121.
Ambulyx auripennis, *Moore, P. Z. S.* 1879, p. 388; *Lep. Ceyl.* ii. pl. 79, figs. 1, 1 *a*, 1 *b* (larva and pupa); *C. & S.* no. 128.
Ambulyx placida, *Moore, P. Z. S.* 1888, p. 390; *Butl. Ill. Het.* vii, pl. 121, fig. 1; *C. & S.* no. 127 A.
Ambulyx sericeipennis, *Butl. P. Z. S.* 1875, p. 251; *C. & S.* no. 122.

The hind wing crenulate. Pale ochreous or greyish brown to purplish brown in colour; an olive-green band between the antennæ; lateral olive-green bands on the thorax meeting on metathorax; abdomen with two olive blotches on the fifth segment, and one on the seventh in some specimens; sides of palpi

Fig. 49.—*Ambulyx substrigilis*, ♀. 1/1.

and pectus ferruginous; some specimens with a ferruginous line down the vertex of abdomen. Fore wing with a basal olive speck; a subbasal olive blotch on the costa, and another below the median

nervure, the former being obsolete in some of the forms; two irregularly dentate, more or less obsolete antemedial lines, and two similar lunulate postmedial lines; a curved band from apex to outer angle, the inner part of which is light, the outer dark. Hind wing ochreous, mottled with fuscous; an erect medial, and curved more or less lunulate postmedial band; some specimens with the anal half of the margin dark.

One Burmese specimen is greyish, the olive markings on thorax and at base of fore wing very prominent, the waved lines well defined. The next palest form *placida* is greyish, with the markings of fore wing ill-defined; *auripennis* is ochreous; *rhodoptera* has a reddish tinge; in *substrigilis* = *sericeipennis* = *schauffelbergii* the markings are more prominent; *liturata* has a purplish tinge with streaks on the nervules; in *consanguis* the costal olive blotch is present, and there is an olive blotch near outer angle; whilst *maculifera* is the darkest form, being purple-brown in colour.

Larva pale green with darker granular spots; a white dorsolateral line; pale yellow oblique streaks on 5th to 10th somites; horn purple, with white granular spots.

Hab. N.W. Himalayas; Sikhim; Assam; Silhet; Ceylon. *Exp.*, ♂ 100, ♀ 130 millim.

104. **Ambulyx semifervens,** *Wlk. Cat.* xxxi, p. 38.

Ambulyx turbata, *Butl. Tr. Zool. Soc.* ix, pl. 93, fig. 7; *C. & S.* no. 124.

Ambulyx thwaitesii, *Moore, Lep. Ceyl.* ii, p. 11, pl. 80, figs. 1, 1 *a*, 1 *b* (larva and pupa); *C. & S.* no. 129.

Ambulyx lahora, *Butl. P. Z. S.* 1875, p. 251; *C. & S.* no. 123.

Ambulyx subocellata, *Feld. Reis. Nov.* pl. 76, fig. 3.

The lateral olive bands on the thorax much narrower than in *substrigilis*. Fore wing with some small grey annular marks taking the place of the subbasal blotches; the antemedial lines much less dentate.

The form *semifervens* = *thwaitesii* is pale ochreous; *turbata* = *lahora* dark ferruginous red, the intermediate gradations occurring.

Larva olive-green above, bluish at sides with pale granulated spots; a white-spotted subdorsal line and lateral stripes; subdorsal and lateral purplish patches on 5th to last somites; a purplish streak on 2nd and 3rd somites; horn green.

Hab. Throughout India and Ceylon; China; Java; New Guinea; Ternate. *Exp.*, ♂ 90, ♀ 110 millim.

105. **Ambulyx rubiginosa,** *Moore, P. Z. S.* 1888, p. 391.

Ambulyx rubescens, *Butl. Ill. Het.* vii, p. 26, pl. 121, fig. 2; *C. & S* no. 61 A.

The hind wing not crenulate; colour dark red-brown slightly suffused with grey. Fore wing with numerous indistinct waved lines; hind wing brighter red; thorax and abdomen yellow below.

Hab. N.W. Himalayas. *Exp.* ♂ 80 millim.

106. **Ambulyx rubricosa,** *Wlk. Cat.* viii, p. 122; *C. & S.* no. 127.

Hind wing broader, the outer margin more rounded. Shafts of antennæ and a band between their bases white; head and vertex of thorax olive-brown; sides of thorax purplish; abdomen greenish, with a red-brown line down the vertex. Fore wing bright glaucous green, with olive-green markings and a patch of purplish grey on inner margin; two indistinct waved antemedial lines; an oblique band from centre of costa to outer angle; a spot at lower end of cell; two lunulate postmedial lines and one waved; outer area olive with some white on it; a white streak from apex and white spots on outer margin. Hind wing brilliant crimson, the base and a diffused postmedial band darker; traces of a medial line; inner area brownish, marked with grey. Underside bright orange suffused with red, and with the markings red.

Hab. Sikhim, and ? Calcutta. *Exp.* ♂ 132 millim.

107. **Ambulyx junonia,** *Butl. Ill. Het.* v, p. 9, pl. 80, fig. 2; *C. & S.* no. 125.

Hind wing hardly angled at anal angle. Differs from *rubricosa* in having no white shaft to, or band between, the antennæ; fore wing with the ante- and postmedial lines obsolete; the whole inner area purplish grey; a large purplish-grey patch on outer margin, the outline between it and the green at apex irregular. Hind wing with a green line traversing the crimson beyond the cell; a large dark ocellus centred with grey below the lower angle of cell; the outer and inner areas brown. Underside greenish yellow, with some crimson on the disk of fore wing; the markings brown.

Hab. Bhutan; Nága Hills. *Exp.* 104 millim.

108. **Ambulyx elwesi,** *Druce, Ent. Mo. Mag.* xix, p. 17; *C. & S.* no. 126; *Waterh. Aid,* ii, pl. 136, fig. 3.

Head, thorax, and abdomen brown. Fore wing rich brown, the area from near the base of costa to outer angle ochreous, crossed by a purplish-grey longitudinal stripe; apex olive-green; a yellow spot at end of cell. Hind wing bright pink; the outer half deep brown, with a line near anal angle. Underside paler.

Hab. Sikhim. *Exp.* ♂ 100 millim.

109. **Ambulyx phalaris,** *Cram. Pap. Exot.* ii, p. 83, pl. 149 A (1777); *C. & S.* no. 163 (part).

Clanis nicobariensis, *Schwarz, Kleem. Beit.* ii, p. 1 (1796).

Head, thorax, and fore wing dark red-brown; abdomen and hind wing paler, the latter with a black patch at the base. Fore wing with two ante- and three postmedial waved lines; a large pale patch on the costa from before the middle to outer margin, leaving the apex dark, the pale patch widest beyond the cell.

Underside: fore wing with a pale triangular patch before the apex; hind wing with three faint transverse lines.

Hab. Sikhim. *Exp.* ♀ 146 millim.

110. **Ambulyx bilineata**, *Wlk. Cat.* xxxv, p. 1857; *C. & S.* no. 159; *Butl. Ill. Het.* v, pl. 81, fig. 4.

Differs from *phalaris* in being much paler; the pale patch on fore wing only indicated by a pale dash from the end of the cell towards the outer margin; the black patch on hind wing larger; but chiefly differing in having a streak of black hairs on the underside of fore wing below the median nervure and vein 2.

Hab. Shanghai; Sikhim. *Exp.*, ♂ 128, ♀ 150 millim.

111. **Ambulyx deucalion**, *Wlk. Cat.* viii, p. 236; *C. & S.* no. 158.

Differs from *bilineata* in being without the pale dash beyond the cell of the fore wing.

Hab. Shillong. *Exp.* ♀ 144 millim.

112. **Ambulyx pagana**, *Fabr. Sp. Ins.* ii, p. 146; *C. & S.* no. 163 (part.).

Basiana cervina, *Wlk. Cat.* viii, p. 237; *C. & S.* no. 160.

Differs from *deucalion* in being much redder in tone, and in wanting the black patch at base of hind wing and black streak on underside below the median nervure of fore wing.

The form *cervina* is smaller and paler. *Phalaris, bilineata, deucalion*, and *pagana* may possibly be varieties of one species.

Larva green, with 7 oblique lateral stripes and short aborted horn.

Hab. Sikhim; Bengal; Madras. *Exp.*, (*pagana*) ♂ 140, ♀ 160 millim; (*cervina*) 110 millim.

113. **Ambulyx exusta**, *Butl. P. Z. S.* 1875, p. 252; *id. Trans. Zool. Soc.* ix, pl. 93, fig. 4; *C. & S.* no. 162.

Differs from *pagana* in having the vertex of the thorax dark; fore wing with a pale irregular indistinct band before the margin; hind wing with two indistinct postmedial and prominent submarginal and marginal dark lines. Underside of fore wing with three postmedial lines, of hind wing with two.

Hab. N.W. Himalayas. *Exp.* 80 millim.

114. **Ambulyx ornea**, *Westw. Cab. Or. Ent.* p. 13, pl. 6, fig. 3; *C. & S.* no. 183.

Smerinthus pudorinus, *Wlk. Cat.* viii, p. 253; *C. & S.* no. 161.

Head, thorax, abdomen, and fore wing reddish ochreous; the fore wing with broad greyish ante- and postmedial bands; a greyish band along inner margin with some dark strigæ on it; a dark speck at the end of the cell. Hind wing pink; a grey patch at anal angle with some dark streaks on it.

Hab. Almorah; Central India. *Exp.*, ♂ 54, ♀ 80 millim

Subfamily CHÆROCAMPINÆ.

Larva with the anterior somites retractile; the third more or less swollen; the third and sometimes some of the other somites laterally ocellated; horn variable.

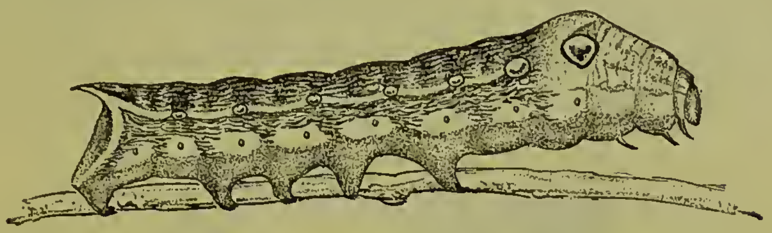

Fig. 50.—Larva of *Chærocampa theylia* (from Hmpsn. Ill. Het. ix. pl. 175. fig. 1).

Pupa without external sheath for the proboscis.

Imago. Proboscis large; apex of fore wing but slightly produced; male with small lateral expansions to abdomen.

Key to the Genera.

a. Hind wing with apex acute.	
a'. Palpi with first joint not hollowed out.	
a^2. Antennæ gradually fining to a long hook.	
a^3. Fore wing slightly excised below apex	1. ACOSMERYX, p. 81.
b^3. Fore wing very acute at apex....	2. AMPELOPHAGA, p. 83.
b^2. Antennæ abruptly hooked.	
a^3. Legs with spurs of moderate length.	3. CHÆROCAMPA, p. 84.
b^3. Legs with spurs very long	4. DAPHNIS, p. 94.
c^2. Antennæ very thick before the hook.	5. DILEPHILA, p. 97.
b'. Palpi with first joint hollowed out	6. THERETRA, p. 99.
b. Hind wing with apex rounded; antennæ gradually fining to a long hook.	
a'. Hind wing with outer margin straight.	7. ELIBIA, p. 100.
b'. Hind wing with outer margin excurved.	8. ANGONYX, p. 101.

Genus **ACOSMERYX.**

Acosmeryx, *Boisd. Sphing.* p. 214 (1875).

Type, *A. ancea*, Cram.

Range. Japan; throughout India and Ceylon; Borneo; Java.

Antennæ rather slight, the hook long; palpi broad at tip; fore wing slightly excised below the apex.

115. **Acosmeryx ancea**, *Cram. Pap. Exot.* iv, p. 124, pl. 355 A; *Butl. Trans. Zool. Soc.* ix, pl. 90, figs. 11, 12 (larva and pupa); *C. & S.* no. 46.

Philampelus sericeus, *Wlk. Cat.* viii, p. 181; *C. & S.* no. 45; *Butl. Ill. Het.* v, pl. 78, fig. 2.

Acosmeryx pseudonaga, *Butl. Ill. Het.* v, p. 2, pl. 88, fig. 3; *C. & S.* no. 47.
Acosmeryx cinerea, *Butl. P. Z. S.* 1875, p. 245; *C. & S.* no. 44; *Moore, Lep. Ceyl.* ii, pl. 89, figs. 2, 2 *a* (larva and pupa).
Acosmeryx shervillei, *Boisd. Sp. Gén.* i, p. 217.
Acosmeryx anceoides, *Boisd. Sp. Gén.* i, p. 216.

Greyish brown; the vertex of head dark; pro-, meso-, and meta-thorax each with a dark transverse streak; dorso-lateral oblique dark stripes on each segment of the abdomen. Fore wing with nine curved and waved antemedial dark lines, the interspaces

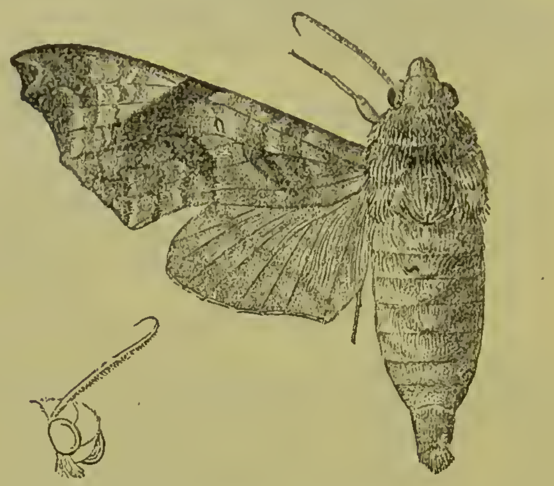

Fig. 51.—*Acosmeryx anceus*, ♂. $\frac{1}{1}$.

between three of the pairs of lines being filled in with dark brown, so as to form one subbasal and two antemedial bands; a dark-ringed pale speck at end of cell, the pale centre being sometimes obsolete; four postmedial curved lines; an oblique dark band from beyond the middle of the costa to outer angle, in some of the forms produced outwards along vein 5 so as to be more oblique; a pale submarginal obsolescent line from below the apex to outer angle, sometimes carried out to the margin at vein 4. Hind wing brownish fuscous, with traces of a pale patch and dark lines near anal angle. Underside more or less suffused with ferruginous, ochreous, and grey; the outer margin of both wings dark; hind wing with five indistinct lines.

The form *ancea* is brownish grey, a small dark specimen from Bhutan being nearest Cramer's figure; in *sericea* the grey parts are suffused with purple or pinkish; in *pseudonaga* the ground-colour is darker and more suffused; whilst the colour of *cinerea* is more uniform greyish fuscous; the dark and light forms appear to occur irrespective of locality.

Larva green; a series of brown dorsal spots and of lateral oblique stripes on fifth to tenth somites; an ocellated spot on fourth somite; a black stripe from first to fourth somite, with a yellow line above it; horn brown.

Hab. Himalayas; N.E. India; S. India; Ceylon; Penang; Borneo; Java; Amboina; Japan. *Exp.* 80–110 millim.

116. **Acosmeryx naga,** *Moore, Cat. Lep. E. I. C.* i, p. 271; *C. & S.* no. 48.

Differs from typical *ancea* in the antemedial lines of the fore wing being more angled outwards; the postmedial streak more oblique and almost reaching the middle of outer margin; the submarginal pale line reaching the outer angle and not bent out to the margin at vein 4.

Hab. N.W. and E. Himalayas. *Exp.* 100 millim.

Genus **AMPELOPHAGA.**

Ampelophaga, *Bremer & Grey, Beitr. Schmett. nördl. China,* p. 11 (1853).

Type, *A. rubiginosa*, Br. & Gr., from Japan.

Range. Japan; Himalayas.

Palpi reaching top of head and pointed at the tip; apex of fore wing acute.

117. **Ampelophaga rubiginosa,** *Bremer & Grey, Schmett. nördl. China,* p. 11; *Mén. Cat. Lep. Petr.* pl. 12, fig. 2.
Ampelophaga romanovi, *Staud. Rom. Mém.* iii, p. 158, pl. ix, fig. 1 *a*.
Ampelophaga fasciosa, *Moore, P. Z. S.* 1888, p. 391; *C. & S.* no. 49; *Butl. Ill. Het.* vii, pl. 121, fig. 3.

Antennæ whitish; head, thorax, and abdomen ruddy olive-brown; a white line on vertex of thorax and abdomen. Fore wing olive-brown, with the markings very indistinct; traces of two

Fig 52.—*Ampelophaga rubiginosa,* ♂. 1/1.

antemedial, one postmedial, and one submarginal line; a dark mark on discocellulars; a triangular patch on costa at apex. Hind

wing fuscous, with the cilia pale. Underside pinkish, each wing with two faint transverse lines.

Larva pale pinkish brown, with numerous short dark strigæ; narrow dorsal and subdorsal lines; a yellow dark-ringed ocellus on the fourth somite, with a black centre speckled with white; a yellow black-ringed ocellus on fifth somite; horn black.

Hab. ? Japan; Amur; N.W. Himalayas; Sikhim; Nágas. *Exp.*, ♂ 90, ♀ 100 millim.

118. **Ampelophaga dolichoides**, *Feld. Reis. Nov.* pl. 76, fig. 8; *C. & S.* no. 51.

Differs from *rubiginosa* in having the palpi pale and with no ruddy tinge. Fore wing with antemedial, medial, and postmedial nearly straight oblique lines, which are pale, outwardly edged by dark brown; a waved and curved submarginal line; no apical triangular patch. Underside less pink.

Hab. Sikhim. *Exp.* 100 millim.

Genus CHÆROCAMPA.

Chærocampa, *Dup. Lép. France, Suppl.* ii, p. 159 (1835).
Isoples, *Hübn. Verz.* p. 135 (gen. indescr.) (1818).
Xylophanes, *Hübn. Verz.* p. 136 (gen. indescr.) (1818).
Hippotion, *Hübn. Verz.* p. 135 (gen. indescr.) (1818).
Panacra, *Wlk. Cat.* viii, p. 154 (1856).
Gnathothlibus, *Wallengr. Œfv. Kongl. Vetens.-Akad. Förh.* 1858, p. 137.
Hathia, *Moore, Lep. Ceyl.* ii, p. 19 (1882).

Type, *C. elpenor*, Linn.

Range. Universally distributed.

Antennæ with the hook short and slight; the palpi moderately broad and quadrate at tip; apex of hind wing rather acute; the discocellulars oblique.

A. *Hind wing crimson.*

119. **Chærocampa elpenor**, *Linn. Syst. Nat.* i, pt. 2, p. 801 (1867); *Westw. & Humphr. Brit. Moths*, pl. 5, figs. 7, 8; *C. & S.* no. 79.
Chærocampa macromera, *Butl. P. Z. S.* 1875, p. 7; *id. Ill. Het.* v, pl. 79, fig. 3; *C. & S.* no. 80.
Chærocampa fraterna, *Butl. P. Z. S.* 1875, p. 247; *id. Ill. Het.* v, pl. 79, fig. 4; *C. & S.* no. 81.
Chærocampa lewisii, *Butl. P. Z. S.* 1875, p. 247.
Chærocampa rivularis, *Boisd. Sp. Gén.* i, p. 280.

Head, thorax, and abdomen olive-green; antennæ, sides of palpi, and head pink; thorax and abdomen with pink dorsal and lateral stripes. Fore wing olive-green; the costa pink; an oblique pink band from beyond end of cell to inner margin; another from apex to inner margin; outer margin broadly pink; inner margin with some white near base. Hind wing with the basal half black, the outer half pink, with a little olive-green

towards apex. Underside with the whole of both wings, except the costa and part of disk, suffused with pink.

Typical *elpenor*=*lewisii* from Europe, Japan, and N.W. India is smaller, with the pink on hind wing and underside rather less developed; in the form *fraterna* from the W. Himalayas the colour is rather duller and the pink on underside more evenly disposed over the disk of both wings than in the eastern form *macromera*.

Larva brown or green, with numerous black strigæ; some indistinct black dorsal lines on first two somites; a black blotch on third somite; pale ocelli on black blotches on fourth and fifth somites.

Hab. Europe; Japan; Sind; Himalayas; Shillong; Nágas; Manipur. *Exp.* (*elpenor*) 64 millim., (*macromera*) 80 millim.

120. **Chærocampa alecto**, *Linn. Syst. Nat.* i, p. 802 (1767); *C. & S.* no. 83; *Cram. Pap. Exot.* ii, pl. 137 D; *Butl. P. Z. S.* 1880, pl. 39, fig. 8 (larva).
Sphinx cretica, *Boisd. Ann. Soc. Linn. Paris*, 1827, p. 118.

Head, thorax, and abdomen pale brown; antennæ and sides of thorax whitish; abdomen with a black lateral patch near base. Fore wing pale brown, with a dark speck at end of cell; six faint oblique lines from near apex to inner margin. Hind wing pink, with a large black patch at base; outer margin black; anal angle flesh-colour, as is the underside.

The form *cretica*, Boisd., from Turkey and Afghanistan, is paler.

Larva green, speckled with yellow; a dorsal green line; a subdorsal yellow stripe and series of yellow ocelli with green centres on fourth to eleventh somites, decreasing in size posteriorly.

Hab. Turkey; China; Formosa; throughout India and Ceylon; Borneo, Java. *Exp.*, ♂ 90, ♀ 106 millim.

121. **Chærocampa eson**, *Cramer, Pap. Exot.* iii, p. 57.
Chærocampa elegans, *Butl. P. Z. S.* 1875, p. 8, pl. 2, fig. 1; *C. & S.* no. 84.
Chærocampa gracilis, *Butl. P. Z. S.* 1875, p. 8, pl. 2, fig. 2.

Differs from *alecto* in the abdomen having faint ochreous stripes and wanting the black patches; the black patch at base of hind wing smaller.

The form *eson* from S. Africa is rather broader and larger than the N. African and Asiatic form.

Hab. Throughout Africa; China; India; Java; Borneo. *Exp.* 70–90 millim.

122. **Chærocampa theylia**, *Linn. Syst. Nat.* i, p. 803 (1767); *C. & S.* no. 85; *Moore, Lep. Ceyl.* ii, pl. 84, fig. 5; *Hmpsn. Ill. Het.* ix, pl. 175, fig. 1 (larva).
Chærocampa rafflesii, *Butl. Trans. Z. S.* ix, p. 556; *Moore, Lep. Ceyl.* ii, pl. 84, fig. 3; *C. & S.* no. 86; *Hmpsn. Ill. Het.* ix, pl. 175, fig. 3 (larva).

Chærocampa vinacea, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 26, pl. 175, figs. 2, 2*a* (larva and pupa).
Sphinx boerhaviæ, *Fabr. Syst. Ent.* p. 542.
Sphinx pluto, *Fabr. Gen. Ins.* p. 274, ii, 148. 40.
Sphinx pinastrina, *Martin, Pysche*, pl. 30, fig. 85.
Pergesa vampyrus, *Fabr. Mant. Ins.* ii, p. 98; *C. & S.* no. 58.
Sphinx octopunctata, *Gmel. Syst. Nat.* i, pt. 5, p. 2386.

Differs from *eson* in being smaller and without the black patch at base of hind wing.

Larva brown, with numerous dark strigæ on dorsal area; lateral area whitish, ventral grey; a large ochreous ocellus on fourth somite, outlined in black and centred with pink above, black below; a series of six decreasing ocelli on an ochreous line from 5th to 10th somites, ochreous, outlined in black and centred with brown; horn pale, short, and rapidly running to a point. Feeds on *Rubiaceæ*.

Fig. 53.
Chærocampa theylia, ♂. 1/1.

The form *rafflesi* is rather darker and brighter coloured than *theylia*. The *larva* is dark chocolate-brown, some seven white subdorsal spots on thoracic somites; seven ocelli on 4th to 10th somites, the first largest, ochreous white, outlined in black and with an ochreous-speckled black centre, the others centred with brown: horn dark brown, the tip ochreous, blunt, and of even diameter throughout, from its base crimson streaks extend forward and backward. Feeds on the same *Rubiaceæ* as *theylia*.

The form *vinacea*, again, is rather darker and brighter coloured, with the *larva* pale brown, a narrow dorsal black line from 1st to 4th somite; pale subdorsal streaks on the same somites; oval ocelli on fourth and fifth somites, ochreous, outlined in black and centred with brown, on which in the first ocellus is an ochreous streak, which in the second is crimson; horn long, straight, and pointed, brown with a white tip, with dark streaks extending forward and backward from its base. Feeds on *Impatiens*.

The imagos of these three forms are almost indistinguishable, and whether we have here three good species breeding true, or the larvæ are in some way affected in form of horn, as well as colour and the number of ocelli, by some conditions of life, we have no evidence to show; all were bred, preserved, and drawn in the same locality by that most careful observer, Mr. E. E. Green of Ceylon, who informs me that the larva of *vinacea* refuses to eat the food-plants of the others.

Hab. China; Formosa; throughout India and Ceylon; Java; Borneo. *Exp.* 60 millim.

123. **Chærocampa celerio**, *Linn. Syst. Nat.* i, p. 800; *C. & S.* no. 88; *Moore, Lep. Ceyl.* ii, pl. 84, fig. 4; *Moore, Lep. E. I. C.* pl. xi, figs. 1, 1 *a* (larva and pupa).
Sphinx tisiphone, *Linn. Syst. Nat.* i, p. 803.
Hippotion ocys, *Hübn. Verz.* p. 135.
Phalæna inquilinus, *Harris, Ex.* p. 93.

Head and thorax as in *eson*; abdomen with a white spot on each segment between the dorsal white lines; a pair of silvery lateral strigæ on each segment. Fore wing paler; some silvery streaks on the median nervure; the nervules beyond the cell streaked with silvery white and black; a silvery-white line from apex to near base of inner margin, followed by some ochreous and pale brown lines; a white submarginal line; the markings are thus similar to *oldenlandiæ*, except that the lines that come out white are different. Hind wing with the base and anal angle bright pink; disk blackish; the outer area ochreous brown, with a black submarginal line and the nervules between it and the cell black.

Larva brown; a series of whitish ocelli with darker centres from 4th to 10th somites; horn and underside white.

Hab. Europe; Africa; the whole of India and Ceylon; Java; Borneo; Timor; Australia; Fiji. *Exp.* 66–74 millim.

B. *Hind wing fuscous, with a more or less defined pale or crimson submarginal band.*

124. **Chærocampa lycetus**, *Cram. Pap. Exot.* i, p. 96, pl. 61 D; *C. & S.* no. 94.
Chærocampa rosina, *Butl. P. Z. S.* 1875, p. 248, pl. 37, fig. 6; *C. & S.* no. 91.
Chærocampa drancus, *Cram. Pap. Exot.* ii, p. 56, pl. 132 F; *C. & S.* no. 89.
Chærocampa prunosa, *Butl. P. Z. S.* 1875, p. 622; *C. & S.* no. 108; *Moore, Lep. Ceyl.* ii. pl. 84, fig. 2.

Differs from *theylia* in being brownish in colour, with but a slight pink tinge; sides of abdomen golden yellow; the two dorsal lines paler. Fore wing with the oblique stripes from the apex silvery white. Hind wing blackish, with some flesh-coloured suffusion on the submarginal area. Underside more ochreous and less pink than in *theylia*.

The form *lycetus* = *rosina* from Mussooree and Sikhim is pinker in tone and has more flesh-colour on the hind wing than *drancus* = *prunosa* from Ceylon.

Hab. Mussooree; Sikhim; Ceylon. *Exp.* 68 millim.

125. **Chærocampa oldenlandiæ**, *Fabr. Syst. Ent.* p. 542; *Moore, Lep. Ceyl.* ii, pl. 85, figs. 1, 1 *a* (larva); *C. & S.* no. 90.
Chærocampa puellaris, *Butl. P. Z. S.* 1875, p. 623; *C. & S.* no. 92.
Xylophanes gortys, *Hübn. Samml. exot. Schm.* figs. 513, 514.

Differs from *lycetus* in being greyish brown without pink suffu-

sion; the two dorsal lines on abdomen silvery white, as also the oblique stripes on fore wing; the sides of abdomen ochreous, not golden. Hind wing with the submarginal band ochreous and narrow.

The form *puellaris* from the N.W. Himalayas is small and pale.

Larva pale purplish brown; a subdorsal line of yellow and white spots with a pale lateral line below them on the thoracic somites; black-ringed ocelli on 4th to 10th somites, the first two centred with blue, the posterior with purple. In the early stages these posterior ocelli are centred with crimson, and there are dorsal bands of yellow specks.

Hab. Egypt; throughout Asia; Philippines; Java; Aru. *Exp.* 80 millim., (*puellaris*) 54 millim.

126. **Chærocampa silhetensis**, *Wlk. Cat.* viii, p. 143; *Butl. Trans. Zool. Soc.* ix, pl. 92, fig. 8 (larva and pupa); *C. & S.* no. 93.
Chærocampa bisecta, *Moore, Lep. E. I. C.* p. 278.
Xylophanes pinastrina, *Moore, Lep. Ceyl.* ii, p. 18, pl. 87, fig. 2.

Differs from *oldenlandiæ* in being very much paler, with but one white line down centre of abdomen. Fore wing with only the line beyond the oblique brown band silvery; the others ochreous.

Larva green, with the dorsal area red-brown; a subdorsal paler line with equal-sized ocelli from 4th to 10th somites with green centres; horn red-brown.

Hab. Throughout India and Ceylon; Java; Borneo; Formosa; Japan. *Exp.* 60–68 millim.

127. **Chærocampa vigil**, *Guér. Deless. Voy.* ii, p. 80, pl. 23, fig. 1; *C. & S.* no. 71; *Moore, Lep. Ceyl.* ii, pl. 87, figs. 3, 3 *a, b* (larva and pupa).
Panacra lignaria, *Wlk. Cat.* viii, p. 156.
Sphinx phœnyx, *Herr.-Schäffer, Eur. Schmett.* pl. 83, fig. 478.

Head and thorax brown, with pale lateral streaks; abdomen brown, with numerous dark strigæ and pairs of pale lateral strigæ on each segment. Fore wing brown; the lines much as in *celerio*, but without any silvery markings, those on the median nervure being absent and the oblique line from the apex (which is much more curved) and those towards outer margin being pale ochreous brown. Hind wing smoky brown, with traces of a darker submarginal line.

Larva pale green or brown, with black dorsal dots; an ocellus on 4th somite, which is blue centred with yellow in the green form, ochreous with black ring and centre in the brown form; a subdorsal line from 5th to 11th somite; horn purplish in the green form.

Hab. Throughout India and Ceylon; Andamans; Philippines; Australia; New Hebrides. *Exp.* 64–74 millim.

128. **Chærocampa insignis,** *Butl. A. M. N. H.* (5) x, p. 432; *C. & S.* no. 75.

Differs from *vigil* in the pale lines on the vertex of abdomen coming out more strongly. Fore wing with black lines developed beyond the cell parallel to the oblique pale line, which is wider and more curved and broadly edged on the outer side with black; the dark submarginal line waved; cilia black, not chequered. Hind wing suffused with pinkish beyond the middle; a dark submarginal line and marginal band. Underside pinkish.

Hab. Andamans. *Exp.* ♀ 60 millim.

129. **Chærocampa busiris,** *Wlk. Cat.* viii, p. 158; *Butl. Ill. Het.* v, pl. 79, fig. 2; *C. & S.* no. 62.

Fore wing highly angled at vein 5 in both sexes.

Head and thorax dark green; palpi pinkish brown; delicate pinkish lines above the eyes and outlining the collar and patagia; abdomen brownish, with darker lateral patches on the first two segments. Fore wing with a brown patch at the base marbled with darker lines and extending further along the costa than the inner margin; a white patch at base of inner margin; a green medial band, wide at costa; a black speck at end of cell; marginal area pale brown with three dark curved lines, the submarginal line waved and white near the apex. Hind wing dark brown; a pale brown marginal line, widest at anal angle, where there are some indistinct lines inside it. Underside green at base, marbled with reddish, purplish, and grey towards outer margin.

Hab. Sikhim; Sylhet. *Exp.*, ♂ 66, ♀ 82 millim.

130. **Chærocampa variolosa,** *Wlk. Cat.* viii, p. 156; *C. & S.* no. 69.
Panacra vagans, *Butl. Ill. Het.* v, p. 4, pl. 78, fig. 7; *C. & S.* no. 74.

Head and thorax olive-green and brown, with numerous brown lines; abdomen with a golden tinge, mottled with purplish grey towards base. Fore wing olive-green, marbled with purplish grey at base; three oblique lines from the apex to centre of inner margin; a submarginal line. Hind wing brown, with some pale marks towards anal angle. Underside of body and wings beautifully suffused with golden yellow; postmedial lines developed on both wings.

Hab. Sikhim; Bhutan; Borneo. *Exp.* 80 millim.

131. **Chærocampa metallica,** *Butl. P. Z. S.* 1875, p. 6; *C. & S.* no. 68.
Panacra perfecta, *Butl. P. Z. S.* 1875, p. 391; *id. Ill. Het.* v, pl. 78, fig. 8; *C. & S.* no. 73.

Differs from *variolosa* in the olive-green and brown tints of both upper and under side being replaced by ochreous and red-brown tints.

The female (*metallica*) has the fore wing broader, with the outer margin more excised below the apex.

Hab. Sikhim. *Exp.* 64–70 millim.

132. **Chærocampa automedon,** *Wlk. Cat.* viii, p. 154; *Butl. Ill. Het.* v, pl. 79, fig. 1; *C. & S.* no. 65.
Panacra truncata, *Wlk. Cat.* viii, p. 160.

The outer margin of fore wing angled at vein 5, more so in the male than in the female.

Markings similar to those of *metallica*; the coloration much duller, being pale ochreous speckled with brown. Underside nearly uniform dull ochreous; one postmedial line coming out as specks on the nervules, the others obsolescent on fore wing, obsolete on hind wing; outer margin rather darker.

Female with the fore wing broader.

Hab. Sikhim; Sylhet; Pegu; Rangoon. *Exp.* 54 millim.

133. **Chærocampa mydon,** *Wlk. Cat.* viii, p. 155; *Butl. Ill. Het.* v, pl. 78, fig. 9; *C. & S.* no. 66.
Panacra scapularis, *Wlk. Cat.* viii, p. 157; *Moore, Lep. E. I. C.* pl. ix, figs. 5, 5 *a* (larva and pupa); *C. & S.* no. 70.
Panacra frena, *Swinh. Cat. Lep. Mus. Oxon.* p. 12, pl. i, fig. 5.

Fore wing less produced at apex; the outer margin more erect and excurved at median nervules.

Differs from *metallica* in the postmedial lines of fore wing being much more erect and highly waved; the white on vertex of thorax and proximal segments of abdomen comes out very strong in some specimens; the markings of the upperside and mottlings of the underside vary from ochreous to red-brown.

Larva greenish, with dark dorsal and lateral stripes and dorsal spots; a purplish ocellus on 4th somite.

Hab. Sikhim; Calcutta; Sylhet; Assam; Java. *Exp.*, ♂ 56, ♀ 62 millim.

134. **Chærocampa assamensis,** *Wlk. Cat.* viii, p. 160; *C. & S.* no. 64.

The fore wing highly angled at vein 5 in both sexes.

Head, thorax, and abdomen pale greyish brown; paired dark brown streaks with pale streaks below them from top of head to second segment of abdomen. Fore wing greyish brown, with a black speck at base and streak on inner margin; a large black patch on the discocellulars, with a triangular patch above and beyond it; traces of a dark line from the end of the cell to the inner margin; a faint waved postmedial line met by a reddish oblique streak from the apex, with some paler marks on it towards inner margin. Hind wing purplish fuscous, with an obsolescent paler submarginal line; the inner margin pale; a streak of dark

hairs along vein 1 *a*. Underside clouded with ochreous and ferruginous, leaving an irregular dark outer margin to both wings.

C. borneensis, Butl., from Borneo, is a race of this species.

Hab. Sylhet. *Exp.* ♂ 55 millim.

135. **Chærocampa gloriosa**, *Butl. P. Z. S.* 1875, p. 246; *id. Ill. Het.* v, pl. 78, fig. 6; *C. & S.* no. 61.

Head and vertex of thorax and abdomen olive-green; antennæ, palpi, and sides of thorax and abdomen crimson. Fore wing olive-green; the costa, antemedial, medial, postmedial, and submarginal maculate irregular bands crimson; outer margin darker olive; a marginal pale pink line; cilia crimson; a black speck at end of cell. Hind wing smoky black, suffused with blood-red towards outer margin. Almost the whole of underside crimson, except a black blotch towards base of fore wing; each wing with three transverse waved lines.

Hab. Sikhim. *Exp.* ♂ 86 millim.

136. **Chærocampa olivacea**, *Moore, P. Z. S.* 1872, p. 567; *C. & S.* no. 55.

Head, thorax, abdomen, and fore wing olive-brown. Fore wing with three reddish curved antemedial lines; a black spot at end of cell; three slightly waved postmedial lines; a short oblique grey stripe from the apex continued as an indistinct lunulate line to the outer angle. Hind wing smoky black; a diffused ferruginous submarginal band. Underside suffused with ochreous and ferruginous; outer margin of both wings darker.

Hab. Simla; Sikhim; Sylhet; Khásis; Shillong. *Exp.* 74–80 millim.

137. **Chærocampa velata**, *Wlk. Cat.* xxxv, p. 1853; *Butl. Ill. Het.* v, pl. 78, fig. 5; *C. & S.* no. 54.

Pergesa aurifera, *Butl. P. Z. S.* 1875, p. 7; *id. Ill. Het.* v, pl. 78, fig. 4; *C. & S.* no. 60.

Zonilia acuta, *Wlk. Cat.* viii, p. 195; *C. & S.* no. 52.

Pergesa ægrota, *Butl. P. Z. S.* 1875, p. 246; *id. Tr. Zool. Soc.* 1876, pl. 92, fig. 2; *C. & S.* no. 59.

Olive-brown; the head and thorax with a greyish lateral band; abdomen with paired dark dorsal specks on each segment; the sides yellow, with a black speck on each segment; white below. Fore wing with three waved antemedial black lines; a dark annulus at end of cell; three dark postmedial waved lines. Hind wing smoky brown, with a paler patch towards anal angle. Underside clouded with ochreous and reddish.

In the variety *aurifera* the waved lines of the fore wing are reduced to a series of black specks.

The form *acuta* is yellowish brown, with the dark markings of

the fore wing obsolescent; the yellow submarginal band of the hind wing narrow but continued to the costa. The form *ægrota* is similarly coloured, but has a dark brown blotch on the antemedial band of the fore wing below the costa and blotches on the postmedial lines; the hind wing has the submarginal band broader, its outer edge being defined by a black line.

Hab. Sikhim; Sylhet. *Exp.* 68–88 millim.

138. **Chærocampa castanea,** *Moore, P. Z. S.* 1872, p. 567; *C. & S* no. 57.

Head and thorax dark red-brown, with lateral grey stripes; abdomen paler. Fore wing dark red-brown; two faint antemedial curved lines; two nearly straight postmedial oblique lines; an irregular grey marginal band. Hind wing uniform dark brown. Underside red-brown; each wing with two postmedial waved lines and irregular dark border.

Hab. Bombay; Satara. *Exp.* 66 millim.

139. **Chærocampa helops,** *Wlk. Cat.* viii, p. 180.
Philampelus orientalis, *Feld. Reis. Nov.* pl. 77, fig. 1; *C. & S.* no. 130.

Head, thorax, and abdomen olive-brown; thorax with a pale lateral streak; abdomen with a pale patch on vertex of 1st segment and black lateral patches on 1st two segments. Fore wing grey-brown; a large olive-brown basal patch with a pale edge; a black speck at end of cell, beyond which the area is suffused with brown; a subapical olive-brown patch, with a waved black line on its outer edge continued as an obsolescent line to outer angle. Hind wing smoky black, with a pale patch at anal angle. Underside ochreous, suffused and speckled with black.

Hab. Sikhim; Penang; Borneo. *Exp.* 116 millim.

140. **Chærocampa lucasi,** *Wlk. Cat.* viii, p. 141; *Moore, Lep. E. I. C.* pl. xi, figs. 3, 3 *a* (larva and pupa); *C. & S.* no. 95.
Chærocampa tenebrosa, *Moore, P. Z. S.* 1877, p. 595; *id. Lep. Ceyl.* ii, pl. 86, figs. 2, 2 *a* (larva); *C. & S.* no. 96.
Chærocampa rhesus, *Boisd. Sphing.* p. 254.

Ochreous brown; the antennæ, front of head, and sides of thorax paler. Fore wing with a black speck at end of cell; two oblique indistinct lines from near the apex to near base of inner margin; three similar lines from the apex nearly parallel to outer margin. Hind wing smoky black, paler towards anal angle. Underside with a slight rosy tinge.

The form *tenebrosa* is darker on both upper and under sides than *lucasii*, which again is darker than *rhesus*, but these differences are varietal, not local.

Larva brown with darker specks; a pale lateral line on thoracic somites; an ocellus on 4th somite, which is white, centred with

crimson, with a black ring on an ochreous ground; a fine subdorsal line on the posterior somites, with leaden oblique streaks below it.

Hab. Throughout India and Ceylon; Andamans; Borneo; Java; China; Australia. *Exp.* 80 millim.

141. **Chærocampa butus**, *Cram. Pap. Exot.* ii, p. 88, pl. 152.
Sphinx velox, *Fabr. Ent. Syst.* iii, p. 378; *C. & S.* no. 97.
Sphinx clotho, *Drury, Exot. Ins.* ii, p. 48; *Moore, Lep. Ceyl.* ii, pl. 87, fig. 1; *C. & S.* no. 98.
Chærocampa gonograpta, *Butl. P. Z. S.* 1875, p. 249; *Hmpsn. Ill. Het.* ix, pl. 175, fig. 10 (larva); *C. & S.* no. 101.
Chærocampa aspersata, *Kirby, Trans. Ent. Soc.* 1877, p. 241; *C. & S.* no. 99; *Waterh. Aid*, i, pl. 97.
Chærocampa punctivenata, *Butl. P. Z. S.* 1875, p. 248; *C. & S.* no. 100.

Differs from *lucasi* in having the fore wing longer, with the apex more pointed; head and thorax greenish; abdomen with black lateral patches on the first segment. Underside more ochreous.

In the form *butus=velox=clotho=aspersata* one of the oblique lines from the apex of the fore wing is prominent; in the forms *gonograpta* and *punctivenata* this line is obsolescent, in the last-named coming out as specks on the nervules.

Larva pale green or brown, speckled with dark striæ; 4th somite with a green ocellus, edged with yellow above, pink below, with a lineal white centre; a pale lateral line from 5th somite to horn, which is purplish; legs pink, claspers green.

Hab. Throughout India, Ceylon, and Burma; Andamans; Borneo; Java. *Exp.* 88–106 millim.

142. **Chærocampa mirabilis**, *Butl. P. Z. S.* 1875, p. 248; *id. Trans. Zool. Soc.* ix, pl. 92, fig. 1; *C. & S.* no. 82.

Head, thorax, and first two segments of abdomen olive-green; sides of head and thorax white; distal segments of abdomen ruddy brown. Fore wing olive-green, the base darker; a dark green antemedial waved line and postmedial curved line; a dark speck at end of cell. Hind wing ruddy brown with traces of a submarginal line. Underside: fore wing brown at base and outer margin; the postmedial area pink; an oblique postmedial brown line: hind wing pink, the outer margin brown; a medial curved brown line.

Hab. N.W. Himalayas. *Exp.* 86 millim.

143. **Chærocampa lineosa**, *Wlk. Cat.* viii, p. 144; *Butl. Ill. Het.* v, pl. 79, fig. 7; *C. & S.* no. 104.
Chærocampa major, *Butl. P. Z. S.* 1875, p. 249; *C. & S.* no. 103.
Chærocampa minor, *Butl. P. Z. S.* 1875, p. 249; *C. & S.* no. 102.

Head, thorax, and abdomen green; head and thorax with a pale

lateral band; thorax with a pale band on vertex; abdomen with four pale dorsal lines. Fore wing green, with a black patch at base of inner margin; a black dot at end of cell; about seven indistinct oblique lines from the apex. Hind wing black, with a diffused pale submarginal band. Underside ochreous, suffused with red and speckled with black; some black in cell of fore wing and postmedial dark lines.

In the variety *major* prominent pale stripes appear between the oblique lines of the fore wing.

In some specimens the second or third line from the outer margin of the fore wing becomes double towards inner margin.

Hab. Mussooree; Sikhim; Assam; Sylhet. *Exp.* 86–108 millim.

C. *Hind wing dull red or orange.*

144. **Chærocampa pallicosta,** *Wlk. Cat.* viii, p. 145; *Moore, Lep. Ceyl.* ii, pl. 84, fig. 6; *C. & S.* no. 106.

Head and thorax red-brown, with a lateral white streak. Fore wing red-brown, with the costa paler; a pale speck at end of cell; a white line along inner margin; a postmedial lunulate diffused dark line and traces of a submarginal line. Abdomen, hind wing, and underside pinkish ferruginous; cilia of hind wing white.

Hab. Assam; Sylhet; E. Pegu; Ceylon; Hongkong. *Exp.* 82 millim.

145. **Chærocampa erotus,** *Cram. Pap. Exot.* ii, p. 12; *C. & S.* no. 107.
Chærocampa erotus, *var.* andamanensis, *Kirby, Trans. Ent. Soc.* 1877, p. 242; *Waterh. Aid,* ii, pl. 141, fig. 1.
Gnathothlibus erotoides, *Wallengr. Wien. ent. Mon.* iv, p. 43.

Brighter in colour than *pallicosta.* Fore wing with a slight purplish suffusion and clouded in parts beyond the middle; two indistinct antemedial curved lines, and two similar postmedial lines. Hind wing bright orange-yellow, with a diffused red-brown band along outer margin except at apex and anal angle; cilia red-brown. Throat and first joint of palpus pure white.

Hab. Andamans; Australia; Solomon Isl. *Exp.* 96–114 millim.

Genus DAPHNIS.

Daphnis, *Hübn. Verz.* p. 134 (1818).

Type, *D. nerii*, Linn.

Range. Europe; Africa, Mauritius; throughout India; Ceylon; Borneo; Java; Amboina; New Hebrides.

The tibial spurs considerably longer than in *Chærocampa*; the palpi slightly more rounded at apex; outer margin of fore wing as in the typical species.

146. **Daphnis nerii,** *Linn. Syst. Nat.* i, p. 798; *C. & S.* no. 112; *Moore, Lep. Ceyl.* ii, pl. 82, figs. 1, 1 *a* (larva and pupa).

Head green, rufous in front; a grey band on vertex. Thorax green, the collar outlined in grey; a triangular grey patch on the vertex. Abdomen paler green, with oblique lines at the side;

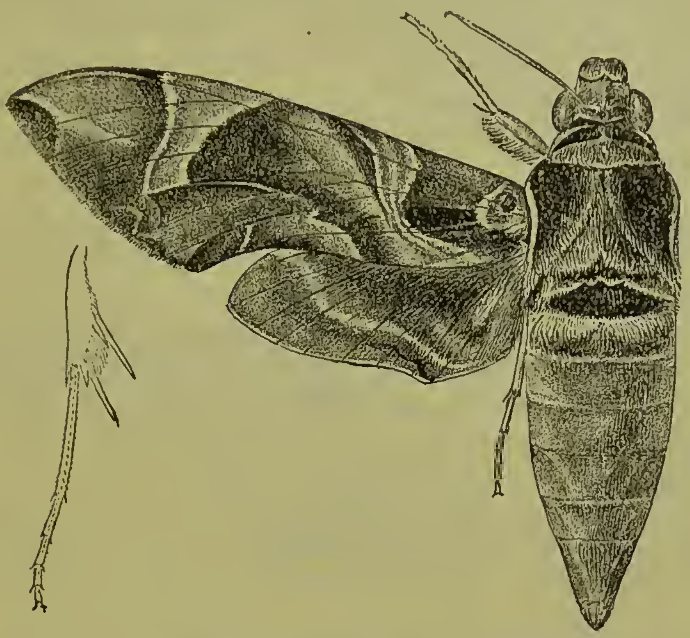

Fig. 54.—*Daphnis nerii*, ♀. ½.

paired dark green lateral blotches on penultimate, and a single dorsal blotch on ultimate segment. Fore wing dark green; a white patch with a black spot on it at base; some medial whitish conjoined bands, rosy towards hind margin; an outwardly oblique band from costa to vein 4; an oblique streak from apex to vein 6; a triangular purplish patch from below the cell to near outer margin. Hind wing fuscous, with a pale curved submarginal line, beyond which the area is olivaceous. Underside suffused with chestnut; a white submarginal line to both wings; a white speck at end of cell of hind wing.

Larva green, with a bluish lateral band from 4th somite to horn, with white oval spots on it, and others above and below it; 3rd somite with a blue ocellus; horn yellow.

Hab. Europe; S. Africa; Mauritius; Aden; throughout India and Ceylon. *Exp.* 70–120 millim.

147. **Daphnis hypothous**, *Cram. Pap. Exot.* iii, p. 165; *Moore, Lep. Ceyl.* ii, pl. 83, figs. 1, 1 *a* (larva and pupa); *C. & S.* no. 113.

Differs from *nerii* in having the head and collar uniformly dark purple-brown; thorax and first two segments of abdomen dark green, with a white fringe to the first; the other segments dark olive-brown, with the streaks and spots as in *nerii*. Wings similarly marked, but very much darker on both upper and under side; a white spot at apex of fore wing and at end of cell of fore wing on the underside.

Larva green, with yellow dots at sides; a darker dorsal line; a subdorsal purple-red band, edged with yellow on thoracic somites and with white from 4th somite; a blue ocellus on 3rd somite; a series of blue white-centred ocelli from 5th to 10th somites; horn purple-brown, with white tubercles. Before changing the larva becomes blotched with dark red; in the early stages the ground-colour is pale red or green.

Hab. Throughout India and Ceylon; Java; Borneo. *Exp.* 98–124 millim.

148. **Daphnis andamanus,** *Druce, Ent. Mo. Mag.* xix, p. 16; *C. & S.* no. 116.

Differs from *hypothous* in the head, thorax, and abdomen being uniform red-brown without markings. Fore wing red-brown, the subbasal and postmedial bands narrower, the latter with the angles at veins 1 and 5, but not produced outwards along vein 4. Hind wing red-brown.

Allied to *horsfieldi*, Butl., from Java and New Guinea, but redder and without the body-markings.

Hab. Andamans. *Exp.* 68 millim.

149. **Daphnis layardi,** *Moore, Lep. Ceyl.* ii, p. 16, pl. 84, fig. 1; *C. & S.* no. 117.

Differs from *hypothous* in being ruddy brown, not olive in hue; abdomen with a pale fringe to each segment. Underside with the white spots at apex of fore wing and at end of cell of each wing minute.

Hab. Ceylon. *Exp.* 86 millim.

150. **Daphnis ernestinus,** *Moore, Lep. Ceyl.* iii, p. 534, pl. 211, fig. 1.

Differs from *layardi* in being pale greyish brown; sides of thorax but slightly darker; no dark patches at end of abdomen. Fore wing with the basal black spot on a grey patch; the pale antemedial area wider; the dark postmedial area with a diffused and not angulate outer margin; the markings towards outer margin very faint. Hind wing uniform dark brown, with a pale submarginal line.

Hab. Pundaloya, Ceylon. *Exp.* 64 millim.

151. **Daphnis bhaga,** *Moore, P. Z. S.* 1865, p. 794; *C. & S.* no. 115.

Differs from *layardi* in the head, thorax, and abdomen being uniform brown, except that the last two segments of the abdomen have a dark triangular dorsal patch. Fore wing highly excised below the apex; the basal markings absent and replaced by an oblique pale line; the medial pale shade more diffused; the dark postmedial patch with more angulate outer edge; a curved line

across the apex as well as the oblique line; no triangular marginal patch below the apex. Hind wing more excised before anal angle; uniform dark brown, the pale submarginal line only appearing near anal angle. Underside without the red suffusion.

Hab. Sikhim; N.E. Bengal; Singapore. *Exp.* 84 millim.

152. **Daphnis minimus**, *Butl. Trans. Zool. Soc.* x, p. 573, pl. 92, fig. 5; *C. & S.* no. 114.

Head and collar grey-brown; tegulæ olivaceous; abdomen grey-brown, with some olivaceous marks towards the extremity. Fore wing grey-brown, with an olivaceous curved subbasal band; a medial band widest and angled below the costa; two postmedial curved lines; a series of marginal dark marks. Hind wing and underside uniform grey-brown.

Hab. S. India. *Exp.* 44 millim.

Genus DILEPHILA.

Deilephila, *Ochs. Eur. Schmett.* iv, p. 42 (1816).

Type, *D. livornica*, Esp.

Range. Europe; Canaries; N. Africa; Madagascar; Afghanistan; Himalayas; China; Hawaii; N. and S. America.

Differs from *Chærocampa* in the end of each antenna being much thicker, with the hook very short; outer margin of fore wing as in typical *Chærocampa*.

153. **Dilephila livornica**, *Esp. Schmett.* ii, pp. 87, 196, pl. 8, fig. 4; *C. & S.* no. 109.

Sphinx kœchlini, *Fuessly, Arch. Ins. Gesch.* pl. 33, figs. 1–5 (larva and pupa).

Fig. 55.—*Dilephila livornica*, ♂. $\frac{1}{1}$.

Head and thorax olive, white lines above the eyes and along sides of thorax, met on metathorax by white lines from the vertex of thorax; abdomen olive, with white lateral segmental patches and black segmental lines with three white dorsal specks on each.

Fore wing olive-green, with a black and white patch at base; a white patch at lower end of cell; an oblique whitish band from apex to near base of inner margin; a grey marginal band; nervules beyond the cell white. Hind wing pink, with the basal area black; a submarginal black band; anal area white.

Larva black with numerous yellow dots; head dull pink; a pink semicircular mark on 1st somite; dorsal line yellow; each somite blotched with red and bordered with black, which expands into a subquadrate patch on 4th to 10th somites; a series of semicircular yellow ocelli on a subdorsal yellow line with pink centres; horn black, with red tip.

Hab. Europe; N. Africa; Aden; N.W. Himalayas; China. *Exp.* 74–94 millim.

154. **Dilephila euphorbiæ**, *Linn. Syst. Nat.* i, pt. 2, p. 802; *Kirby, Eur. Butt. & Moths*, pl. 18, fig. 1 *a* (larva).
Deilephila lathyrus, *Wlk. Cat.* viii, p. 172; *C. & S.* no. 110; *Butl. Ill. Het.* v, pl. 80, fig. 1.

Differs from *livornica* in wanting the white lines from vertex of thorax; abdomen without dorsal marks and with the black and white lateral marks only on the first two segments. Fore wing with a whitish band narrowing to the inner margin and extending on the costa from before the middle to the apex; speckled with brown and sometimes with a rosy tinge, and enclosing an oval olive patch beyond the cell.

The Himalayan form *lathyrus* averages rather larger than the European *euphorbiæ*.

Larva black, dotted with yellow; a dorsal red stripe; a lateral red stripe spotted with yellow; a series of equal-sized yellow ocelli.

Hab. Europe; N.W. Himalayas to Naini Tal. *Exp.* (*euphorbiæ*) 60–80 millim., (*lathyrus*) 76–92 millim.

155. **Dilephila galii**, *Roth, Natur.* vii, p. 107 (1775); *Kirby, Eur. Butt. & Moths*, pl. 18, fig. 2 *a* (larva).

Differs from *euphorbiæ* in the thorax having a black line above the lateral white streak; the abdomen with white segmental specks on the vertex, more or less joined by a white line; the fifth and sixth segments with prominent lateral white bands; the 3rd segment in some specimens with a black band behind the lateral white band. Fore wing with the oblique pale band not reaching the apex, and the projections from it at centre and near apex not reaching the costa. Hind wing with the submarginal black band broader.

Larva green, with a yellow dorsal line; large black-ringed yellow lateral spots on each segment; claspers and anal segment reddish; ventral surface yellow.

Hab. Europe; Gurais Valley, Kashmir, 6000 feet. *Exp.* ♂ 64–72 millim., ♀ 84 millim.

156. **Dilephila dahlii,** *Geyer, Samml. Sphing.* figs. 161–164.
Deilephila robertsi, *Butl. P. Z. S.* 1880, p. 412, pl. 39, figs. 9, 10 (larva & pupa); *C. & S.* no. 111.

Differs from *galii* in the thorax having two white stripes, the tegulæ being fringed with white on the inner side also; abdomen as in *euphorbiæ*. Fore wing as in *galii*, hind wing with the band pinker.

Some specimens have the segments of abdomen fringed with blue scales and the veins on outer area of fore wing streaked with white.

Larva dark grey, spotted with white; alternate red and yellow dorsal stripes; a yellow lateral stripe; each segment with two large black-ringed or irregular white spots and three small ones. Horns, legs, and spiracles red.

Hab. Europe; Kandahar; Simla. *Exp.* 82 millim.

Genus THERETRA.

Theretra, *Hübn. Verz.* p. 135 (1818).

Type, *T. nessus*, Drury.

Range. China; India; Borneo; Java.

Differs from *Chærocampa* in having the basal joints of the palpi hollowed out, with an orifice towards the exterior beset with (?) sensory setæ.

157. **Theretra nessus,** *Drury, Exot. Ins.* ii, p. 46, pl. xxvii, fig. 1; *C. & S.* no. 105; *Moore, Lep. Ceyl.* ii. pl. 86, fig. 1; *id. Cat. E. I. C.* pl. xi. figs. 2, 2 *a* (larva and pupa).

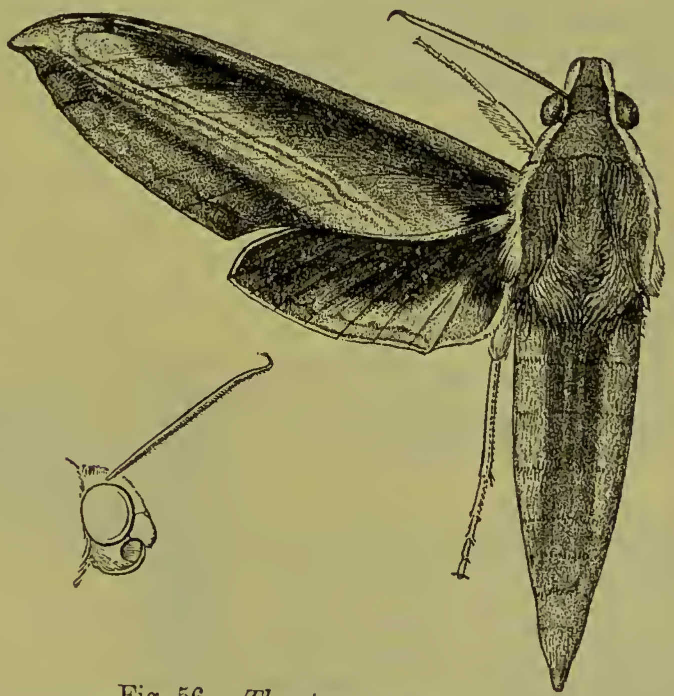

Fig. 56.—*Theretra nessus*, ♂. 1/1.

Sphinx equestris, *Fabr. Ent. Syst.* iii, p. 365.
Chærocampa nessus, *var.* rubicundus, *Schaufuss, Nunq. Otiosus*, i, p. 18.

Head, thorax, and a stripe down centre of abdomen green suffused with ferruginous; thorax with a lateral grey stripe; abdomen golden yellow at sides. Fore wing olive-brown, the base green with a patch of black and white on the inner margin; a black dot at end of cell; a postmedial waved oblique line met by three straight oblique lines from the apex at inner margin; two submarginal lines. Hind wing black-brown; the anal angle ochreous, which colour extends towards the apex as a submarginal band. Underside suffused with reddish ochreous.

Larva blue-green, a subdorsal line with oblique streaks below it on 4th–10th somites; 4th somite with a black-ringed green ocellus centred with black; horn yellow.

Hab. Hongkong, throughout India, Ceylon, and Burma; Borneo; Java. *Exp.* 92–122 millim.

158. **Theretra actea**, *Cram. Pap. Exot.* iii, p. 93, pl. 248 A; *C. & S.* no. 53; *Moore, Lep. Ceyl.* ii, pl. 88, figs. 1, 1 *a* (larva and pupa).

Differs from *nessus* in the head, thorax, and abdomen being purplish grey; vertex of head and a dorso-lateral stripe to thorax and abdomen green. Fore wing purplish grey; a green oblique central area from below apex to inner margin with some indistinct lines on it; an irregular dark outer area with some yellow inside it. Hind wing with anal patch and submarginal band pointed.

Larva green; a dark dorsal line; a subdorsal pale line on thoracic somites; 4th somite with a large ocellus, white ringed with brown and centred with blue and green; 5th–10th somites with blue ocelli centred with yellow; lateral area whitish; horn yellow.

Hab. Throughout India and Ceylon; Borneo; Java. *Exp.* 74–80 millim.

Genus **ELIBIA**.

Elibia, *Wlk. Cat.* viii, p. 148 (1856).

Type, *E. dolichus*, Westw.

Range. N.E. India; Sumatra.

Palpi very thickly and quadrately scaled at apex; antennæ gradually fining to a long hook. Fore wing acute at apex; veins 6 and 7 of hind wing from end of cell.

159. **Elibia dolichus**, *Westw. Cab. Or. Ent.* p. 61, pl. 30, fig. 1; *C. & S.* no. 50.

Head, thorax, and abdomen brown; thorax with three pale stripes; abdomen with a broad dorsal pale stripe. Fore wing pale brown, with dark brown very oblique lines, the two broadest from near the apex; a small ring-spot at end of cell. Hind wing bluish at base, the outer area blackish; cilia chequered white and brown.

Underside pale; a waved submarginal line to fore wing; hind wing with two waved lines.

Hab. Sikhim; Sylhet; Assam; Sumatra. *Exp.* 120 millim.

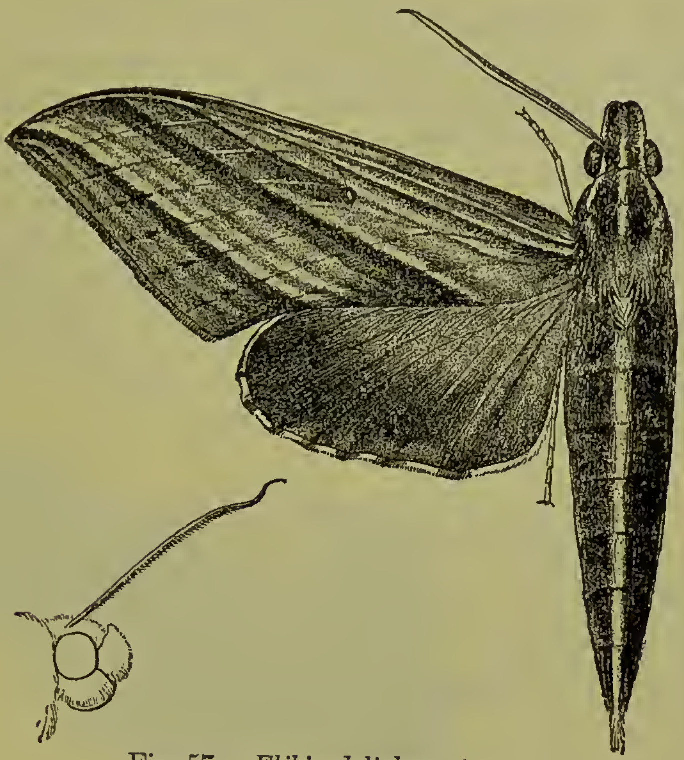

Fig. 57.—*Elibia dolichus*, ♂. 1/1.

Genus ANGONYX.

Angonyx, *Boisd. Sphing.* p. 317 (1875).
Microlophia, *Feld. Reis. Nov.* pl. 75 (1874), gen. indescr.

Type, *A. testacea*, Wlk.

Range. Sylhet; S. India; Ceylon; Siam.

Antennæ gradually tapering to a long hook. Palpi very broad at apex. Fore wing with the outer margin excurved at middle; hind wing with the apex rounded.

160. **Angonyx testacea**, *Wlk. Cat.* viii, p. 102; *Moore, Lep. Ceyl.* ii. pl. 89, fig. 1; *C. & S.* no. 63.
Angonyx emilia, *Boisd. Sp. Gén.* p. 318.
Panacra ella, *Butl. P. Z. S.* 1875, p. 246.

Fig. 58.
Angonyx testacea, ♂. 1/1.

Head, thorax, and abdomen uniform dark green. Fore wing dark green, with a grey band beyond the middle not reaching the costa, beyond which the wing is clouded with black; a waved submarginal line; cilia black. Hind wing dark red-brown, dark brown at base; outer margin with a

broad irregular brown band; some grey towards anal angle. Underside reddish ochreous, greenish towards outer margin.

Hab. Sylhet; Nilgiris; Ceylon. *Exp.* 58 millim.

161. **Angonyx sculpta,** *Feld. Reis. Nov.* pl. 75, fig. 9; *C. & S.* no. 76.

Outer margin of fore wing excurved at median nervule. Head and thorax green, with lateral white bands; thorax dark grey on vertex; abdomen with the proximal segments orange at sides, black above, with a green spot on third segment; the fourth segment grey, the distal segments black. Fore wing green, a grey streak at base; a pale line along inner margin; a postmedial pale band not reaching the costa; a submarginal dentate line, beyond which the area is grey. Hind wing orange at base, diffused outwards along the costa and to anal angle; a large black patch on outer margin, with two grey spots near the margin.

Hab. Siam; S. India. *Exp.* 60 millim.

Subfamily SPHINGINÆ.

Larva with the anterior segments but slightly smaller than the

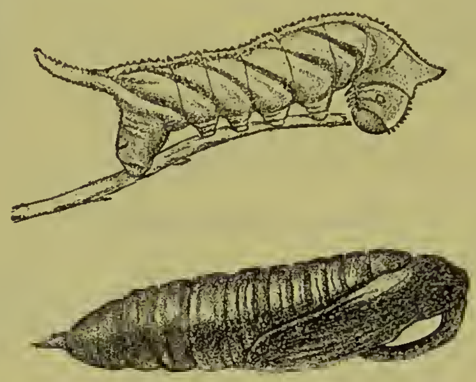

Fig. 59.—Larva and pupa of *Pseudosphinx cyrtolophia.* (From Butler, Tr. Z. S. ix, pl. 91.)

posterior; the head curved downwards in repose; horn (when present) long and curved.

Pupa generally with an external sheath for the proboscis.

Imago with the proboscis very long. Male without lateral expansions to abdomen.

Key to the Genera.

a. Palpi quadrately scaled at apex.
  a'. Fore wing but slightly acute at apex.
    a^2. Hind wing with discocellulars curved . . 1. PROTOPARCE, p. 102.
    b^2. Hind wing with discocellulars straight and oblique . . . . 2. PSEUDOSPHINX, [p. 104.
  b'. Fore wing more produced and acute at apex . . . . 3. APOCALYPSIS, p. 107.
b. Palpi rounded at apex . . . . 4. NEPHELE, p. 108.

Genus **PROTOPARCE.**

Protoparce, *Burmeister, Abh. nat. Gesell. Halle*, iii, pt. 2, p. 63 (1855).
Hyloicus, *Hübn. Verz.* p. 138 (1816), gen. indescr.

Type, *P. rustica*, Wlk., from Brazil.

Range. Universally distributed.

Palpi quadrately scaled at apex. Veins 6 and 7 of hind wing arising from the angle of the cell; the upper discocellular bent out to the origin of vein 5.

162. **Protoparce convolvuli,** *Linn. Syst. Nat.* i, p. 798; *C. & S.* no. 168.
Protoparce orientalis, *Butl. Tr. Z. S.* ix, p. 609; *C. & S.* no. 167; *Moore, Lep. Ceyl.* ii, pl. 75, figs. 1, 1 *a–e* (larva and pupa).

Fig. 60.—*Protoparce convolvuli*, ♂. 1/1.

Head, thorax, and a streak down the vertex of abdomen grey; abdomen with lateral transverse bands of pink and black to each segment; grey below. Fore wing grey, with black streaks below veins 2 and 3; a highly dentate dark postmedial line met by an irregular black streak from the apex. Some specimens are much clouded with fuscous, which sometimes takes the form of a broad medial band leaving two small pale spots in the end of the cell. Hind wing grey; antemedial, medial, and postmedial piceous bands, the two former meeting at anal angle, the two latter lunulate.

Larva green, the horn yellow; a series of oblique lateral pink and white stripes on the fourth to tenth somites; stigmata ringed with yellow and black. The European form has a black spot above each lateral stripe, the absence of which is the only character relied on for separating *orientalis*.

Hab. Europe; Africa; Asia; Borneo; Java; Celebes; Lombock; Ternate. *Exp.*, ♂ ♀ 80–120 millim.

163. **Protoparce uniformis**, *Butl. P. Z. S.* 1875, p. 261; *C. & S.* no. 182.

♂. Grey; palpi black; thorax with the vertex surrounded with black; abdomen brownish grey. Fore wing with an obsolescent curved diffused medial band; two similar postmedial bands bent inwards at vein 2. Hind wing and underside uniform brownish grey.

Hab. N.W. Himalayas. *Exp.* 54 millim.

Genus PSEUDOSPHINX.

Pseudosphinx, *Burmeister, Abh. nat. Gesell. Halle*, iii, pt. 2, p. 65 (1855).
Diludia, *Grote & Robinson, Proc. Ent. Soc. Phil.* v, p. 188 (1865).

Type, *P. tetrio*, Linn., from Brazil.

Range. India; W. Indies; S. America.

The discocellulars of the hind wing straight and oblique; veins 6 and 7 of hind wing stalked or from angle of cell; palpi with the third joint more pointed and less broad.

164. **Pseudosphinx inexacta**, *Wlk. Cat.* viii, p. 208; *C. & S.* no. 170; *Butl. Ill. Het.* v, pl. 81, fig. 8.

♂. Head and thorax dark brown grizzled with white; thorax with some white marks at sides and round the vertex; abdomen with a black streak on the vertex of each segment, golden brown above, brown at sides, and white and black below. Fore wing variegated with grey, dark brown, and golden brown; somewhat indistinct dark waved antemedial, medial, postmedial, and submarginal lines, of which the medial is the most strongly marked; a conspicuous white spot at end of cell. Hind wing brown; the cilia chequered brown and white.

Hab. Mussooree; Khásis; Bombay. *Exp.* 86 millim.

165. **Pseudosphinx grisea**, n. sp.

♂. Differs from *inexacta* in the ground-colour of the head, thorax, and abdomen being grey; the black lines similar, but with no white on thorax. Fore wing similarly marked, but with the ground-colour grey. Hind wing pale fuscous; cilia grey, with black points at the nervules, not chequered black and white.

Hab. Kulu (*Graham-Young*). *Exp.* 52 millim. Type in coll. Leech.

166. **Pseudosphinx fo**, *Wlk. Cat.* viii, p. 195; *Butl. Ill. Het.* v, pl. 81, fig. 9; *C. & S.* no. 172.

Head, thorax, abdomen, and fore wing greyish brown or olive-brown; abdomen with yellow lateral segmental patches. Fore wing crossed by subbasal, antemedial, medial, and postmedial double

waved black lines; a conspicuous white spot in end of cell. Hind wing dark brown.

Hab. Sikhim. *Exp.* 64–68 millim.

167. **Pseudosphinx nyctiphanes**, *Wlk. Cat.* viii, p. 209; *Butl. Ill. Het.* v, pl. 81, fig. 7; *C. & S.* no. 169.

Dark brown; thorax with black streaks at sides nearly meeting behind, where there are a few blue scales; head, thorax, and abdomen white below; abdomen with white segmental streaks at sides. Fore wing variegated with various shades of brown and grey scales and crossed by numerous waved dark lines, of which about six are medial and one submarginal; a pale speck in end of cell. Hind wing dark brown, with an obsolescent pale medial band; cilia brown and whitish.

Hab. Sylhet; Andamans; Perak; Singapore. *Exp.*, ♂ 120, ♀ 140 millim.

168. **Pseudosphinx cyrtolophia**, *Butl. P. Z. S.* 1875, p. 259; *id. Trans. Zool. Soc.* ix, pl. 92, fig. 6, pl. 91, figs. 11, 12, 13 (larva and pupa); *C. & S.* no. 171.

Differs from *nyctiphanes* in the palpi being black at sides. Fore wing with no postmedial waved line below. Hind wing with the pale band on underside medial, straight, and oblique, not postmedial, curved, and waved.

The type and only known specimen is in very bad condition.

Larva grass-green; a white dorsal stripe from 2nd somite to horn; a pink dorsal oval ring-mark on 1st and 2nd somites; a larger one from 2nd to 4th somites; lateral oblique pink stripes from 5th to 10th somites.

Hab. Madras. *Exp.* 83 millim.

169. **Pseudosphinx discistriga**, *Wlk. Cat.* viii, p. 209; *Moore, Lep. Ceyl.* ii, pl. 73, figs. 1, 1 *a*, 1 *b* (pupa and larva); *C. & S.* no. 176.

Diludia melanomera, *Butl. P. Z. S.* 1875, p. 13; *C. & S.* no. 177.
Diludia macromera, *Butl. A. M. N. H.* (5) x, p. 435.
Diludia grandis, *Butl. P. Z. S.* 1875, p. 260; *C. & S.* no. 175.
Diludia rubescens, *Butl. P. Z. S.* 1875, pp. 260, 623; *C. & S.* no. 178.
Macrosila obliqua, *Wlk. Cat.* viii, p. 208; *C. & S.* no. 174.
Anceryx increta, *Walk. Cat.* xxxi, p. 36; *C. & S.* no. 179.
Diludia vates, *Butl. P. Z. S.* 1875, p. 13; *C. & S.* no. 180.
Anceryx pinastri, *Wlk. Cat.* viii, p. 223.

Head, thorax, abdomen, and fore wing grey; dark brown bands along sides of palpi and thorax meeting on metathorax, where there are a few blue and yellow scales; a dark line down vertex of abdomen and paired more diffused subdorsal lines. Fore wing with some dark strigæ from the costa; two dark streaks in the interspaces below veins 2 and 3; a dark streak from the costa before the apex, curved down to vein 6, then upwards and bent back before reaching the apex; a series of submarginal lunules; cilia chequered brown and white. Hind wing brown, with

a pale patch with two dark lines across it near anal angle. Underside paler, with indistinct transverse lines.

There are four well-marked varieties which are not locally constant:—

(1) *rubescens*, a dark red-brown form with a prominent oblique black streak from costa of fore wing to lower end of cell; hind wing very dark.

(2) *discistriga* = *melanomera* = *macromera* = *grandis*, a grey form, much powdered and suffused with dark brown.

(3) *obliqua*, a whitish-grey form with a prominent black streak on fore wing as in *rubescens*, but continued to the outer

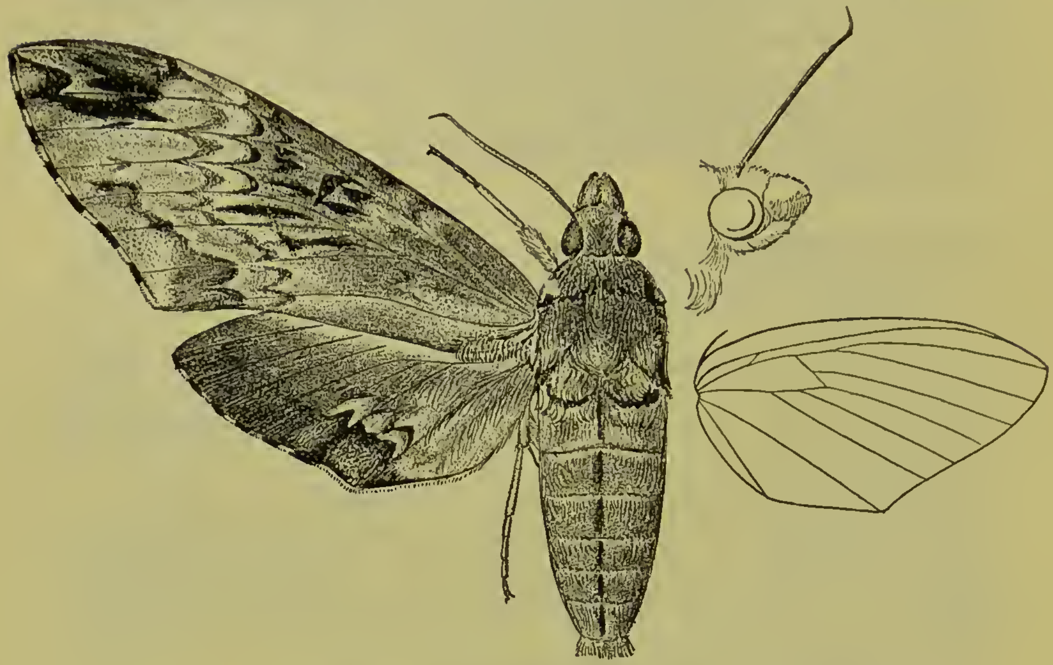

Fig. 61.—*Pseudosphinx discistriga*, ♂. $\frac{1}{1}$.

margin; hind wing very dark; the patch at anal angle remaining pale.

(4) *increta* = *vates*, a pale form but slightly powdered with brown.

Larva green, with white specks on the vertex of somites 1, 2, and 3; oblique white lateral stripes on somites 4–11, with brown streaks above them on somites 4 and 10.

Hab. China and throughout India and Ceylon. *Exp.* 90–140 millim.

170. **Pseudosphinx concolor**, n. sp.

♂. Head, thorax, and abdomen grey; sides of head black; collar fringed with black, and tegulæ streaked with black. Fore wing grey; traces of a medial ferruginous band most prominent on inner area; two black streaks in the interspaces between veins 2 and 4; dark points on the cilia at veins. Hind wing reddish brown, the cilia uniform grey

Differs from the European *pinastri* and allies in the uniform

colour of abdomen; fore wing in having no black streak from apex; cilia not chequered black and white.

Hab. Subathu; Simla (*Harford*). *Exp.* 50 millim. Type in B. M.

Genus APOCALYPSIS.

Apocalypsis, *Butl. Trans. Zool. Soc.* ix, p. 641 (1876).

Type, *A. velox*, Butl.

Range. Sikhim; Khási Hills.

Differs from *Pseudosphinx* in the fore wing being more produced and pointed at apex, the outer margin more oblique and straight, not crenulate.

171. **Apocalypsis velox**, *Butl. Tr. Z. S.* ix, p. 641; *C. & S.* no. 173.

Head dark brown; thorax dark brown, with pale paired lines on each side of vertex; abdomen dark brown, with a series of black dorsal streaks and black segmental lines with white specks on them. Fore wing dark brown; white spots at extremities of the veins,

Fig. 62.—*Apocalypsis velox*, ♂. 1/1.

which are pale; pale obliquely waved antemedial double lines; a curved postmedial pale band formed of three conjoined lines; a yellow streak from the apex continued as a very dentate line to outer angle. Hind wing dark brown, with traces of lines near anal angle; inner margin ochreous; cilia chequered ochreous and brown. Underside of both wings brown with medial and postmedial indistinct lines.

Hab. Sikhim; Khásis. *Exp.* 136 millim.

Genus NEPHELE.

Nephele, *Hübn. Verz.* p. 133 (1818).

Type, *N. hespera*, Fabr.

Range. Throughout India and Ceylon; Australia; Madagascar; Africa.

Antennæ with the terminal hook rather short and slight; palpi with the second joint very broad and rounded. Wings rather short and broad: apex of fore wing but slightly acute.

Pupa with the anterior somites narrow; no external sheath for proboscis.

172. **Nephele hespera**, *Fabr. Syst. Ent.* p. 546; *Moore, Lep. Ceyl.* ii, pl. 72, figs. 1, 1 *a*, *b* (pupa and larva); *C. & S.* no. 185.
Sphinx chiron, *Cram. Pap. Exot.* ii. p. 62.
Sphinx didyma, *Fabr. Sp. Ins.* ii, p. 148.
Sphinx quaterna, *Charpentier, Ed. Esper's Exot. Schmett., Sph.* pl. 1, fig. 2.
Sphinx morpheus, *Cram. Pap. Exot.* ii, p. 84.
Perigonia obliterans, *Wlk. Cat.* xxxi, p. 28.

Head, thorax, and abdomen olive-brown or green; abdomen with lateral black segmental bands. Fore wing olive-brown or green, with six faint waved lines and an angled submarginal line,

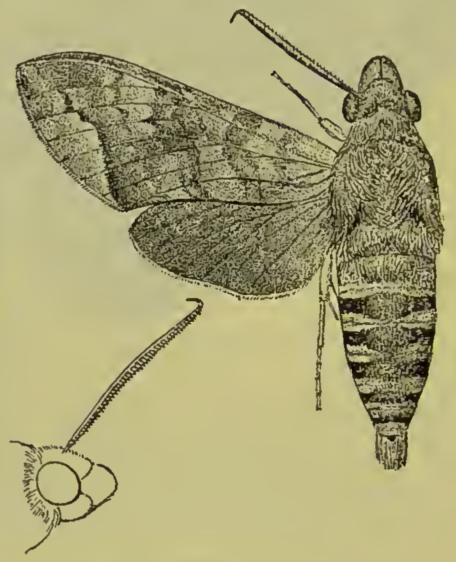

Fig. 63.—*Nephele hespera*, ♂. 1/1.

the space between it and outer margin paler; at the end of the cell are two conspicuous silvery white spots, which may be reduced to a small speck or be altogether obsolete. Hind wing red-brown; the cilia ochreous. Underside paler, each wing with two transverse lines.

Larva green, with a pale stripe from 7th to 11th somites.

Hab. Throughout India and Ceylon; Australia.

Subfamily MACROGLOSSINÆ.

Larva with the thoracic somites retractile and tapering to head; horn long and curved.

Imago. One medial and two lateral tufts of hair at end of abdomen.

Fig. 64.—Larva of *Macroglossa gilia* (from Hmpsn. Ill. Het. ix, pl. 175, fig. 6).

Key to the Genera.

a. Fore wing more than twice length of antennæ.
  a'. Antennæ gradually fining to a long hook; anal tufts small .... 7. Rhodosoma, p. 122.
  b'. Antennæ abruptly hooked; anal tufts large .... 6. Sataspes, p. 121.
b. Fore wing less than twice length of antennæ.
  a'. Antennæ gradually fining to a long hook; outer margin of fore wing angulate, inner margin excised .... 1. Gurelca, p. 109.
  b'. Antennæ abruptly hooked; margins evenly rounded.
    a^2. Fore wing with vein 6 from end of cell; hind wing with veins 3, 4, and 6, 7, from end of cell.
      a^3. Cell of hind wing of normal length.
        a^4. Antennæ abruptly thickening to the club .... 2. Rhopalopsyche, [p. 111.
        b^4. Antennæ gradually thickening to club .... 3. Macroglossa, [p. 112.
      b^3. Cell of hind wing short .... 4. Hemaris, p. 119.
    b^2. Fore wing with vein 6 given off after end of cell; hind wing with veins 3, 4, and 6, 7 stalked; the cell extremely short .... 5. Cephonodes, p. 120.

Genus GURELCA.

Gurelca, *Kirby, Proc. Roy. Dubl. Soc.* ii, p. 330 (1880).

Type, *G. hyas*, Wlk.

Range. N. India; Mhow; Java; China; Japan.

Antennæ gradually fining to a long hook. Palpi with the second joint rather broad; crest on head well developed. Fore wing with outer margin angled.

SECT. I. Hind wing with the costa much excised.

173. **Gurelca hyas**, *Wlk. Cat.* viii, p. 107; *Butl. Trans. Zool. Soc.* ix, pl. 90, figs. 1-3 (larva and pupa); *C. & S.* no. 40.

Head, thorax, and abdomen grey-brown; the collar and tegulæ outlined with red-brown; abdomen with some red-brown lateral segmental marks. Fore wing grey-brown, a black speck at base; two indistinct pale curved antemedial lines; a grey streak on discocellulars, with a dark red-brown patch on each side of it; two highly angulate postmedial lines, with a pale line between them from vein 3 to inner margin; a red-brown streak below vein 4; a red-brown mark on inner margin before the outer angle; a curved submarginal line; a subtriangular dark marginal patch below the apex. Hind wing yellow, with an annular spot on discocellulars; a broad evenly curved marginal brown band. Underside of both wings ochreous, much marbled and suffused with red-brown and brown, with a broad, irregular, marginal, grey-brown band; inner area of hind wing yellow.

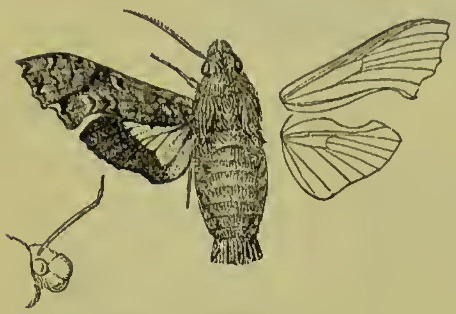

Fig. 65.—*Gurelca hyas*, ♂. 1/1.

Larva green variegated with red-brown; or else red-brown with the thoracic somites green; lateral oblique streaks from 5th to 9th somites.

Hab. Hongkong; Sikhim; Sylhet; Mhow; Java. *Exp.* 40 millim.

174. **Gurelca masuriensis**, *Butl. P. Z. S.* 1875, p. 244, pl. 36, fig. 3; *C. & S.* no. 37.
Lophura himachala, *Butl. P. Z. S.* 1875, p. 621; *C. & S.* no. 42.
Lophura erebina, *Butl. P. Z. S.* 1875, p. 621; *C. & S.* no. 43.

Differs from *hyas* in the thorax and abdomen being more marbled with red-brown. Fore wing with the markings confused by being more marbled; the dark mark on inner margin near outer angle absent. Hind wing much more produced at apex; the marginal band broader at the costa, narrower towards anal angle, with its inner edge straight.

Hab. Mussooree; N.E. Himalayas. *Exp.* 50 millim.

*175. **Gurelca macroglossoides**, *Wlk. Cat.* xxxv, p. 1851; *C. & S.* no. 56.

From the description this species would appear to differ from *hyas* and *masuriensis* in the fore wing being "powdered with cinereous bloom," with some oblique irregular lines; a black sub-

costal streak intersected by a forked, slightly gilded line; an undulated gilded submarginal line. Hind wing with part of the base dark, the yellow band with curved margin.

Hab. Sikhim. *Exp.* 48 millim.

SECT. II. The costa of hind wing very slightly excised before the apex.

176. **Gurelca pusilla,** *Butl. P. Z. S.* 1875, p. 244; *C. & S.* no. 38.
Lophura pumilio, *Boisd. Spec. Gén.* i. p. 311; *C. & S.* no. 39.

♂. Differs from *hyas* in there being a black spot at end of cell of fore wing; a broad, oblique dark band from costa beyond the cell to centre of inner margin. Hind wing with the marginal band red-brown. Underside; fore wing with the marginal band narrow at outer angle; hind wing with medial and postmedial curved lines; no marginal band.

Hab. Cachar; Sylhet. *Exp.* 30 millim.

Genus RHOPALOPSYCHE.

Rhopalopsyche, *Butl. P. Z. S.* 1875, p. 239.

Type, *R. nycteris*, Koll.

Range. Himalayas and Peninsular India.

Antennæ clubbed, the basal half thin, the hook short and slight; with no bands of ciliæ in male. Palpi with the apex porrect and acutely scaled; fore wing not more than twice the length of antennæ, the outer margin excurved. Flight diurnal.

177. **Rhopalopsyche nycteris,** *Koll. Hüg. Kaschm.* iv, p. 458, pl. 19, fig. 5; *C. & S.* no. 8.
Macroglossa volucris, *Wlk. Cat.* viii, p. 94.

Head, thorax, and abdomen grey-brown; abdomen with lateral yellow bands on the first three segments; the penultimate segment fringed with white; four lateral tufts increasing in size posteriorly, the first two white, the others black tipped with orange, anal tufts black. Fore wing grey-brown; some subbasal indistinct lines; an antemedial band, recurved towards the base at inner margin; three postmedial curved lines; a square brown spot on the costa before the apex, with a black spot below it, from which a waved oblique line runs to the apex. Hind wing black-brown with a broad medial yellow band.

Fig. 66.—*Rhopalopsyche nycteris*, ♂. 1/1.

Hab. Himalayas; Khásis; Burma. *Exp.* 41 millim.

178. **Rhopalopsyche bifasciata**, *Butl. P. Z. S.* 1875, p. 239, pl. 36, fig. 4; *C. & S.* no. 7.

Differs from *nycteris* in having the antemedial band darker; the interspace between the first two postmedial lines filled in with dark so as to form a band. Hind wing with the band extending nearly to the base and bright orange in colour, as are the lateral bands on abdomen.

Hab. Nilgiris, 3000–8000 feet. *Exp.* 42 millim.

Genus **MACROGLOSSA.**

Macroglossum, *Scop. Intr. Hist. Nat.* p. 414 (1777).
Rhamphoschisma, *Wallengr. Œfv. af Kongl. Vet.-Akad.* xv, p. 139 (1858).

Type, *M. stellatarum*, Linn.

Range. Europe; Africa; Asia; and Australasian region.

Antennæ gradually thickening to a club; male with tufts of cilia. Fore wing with outer margin evenly rounded.

The species are numerous, closely allied, and difficult to discriminate.

Group I. Male with the costa of hind wing evenly arched.

A. *Hind wing dark red.*

179. **Macroglossa fervens**, *Butl. P. Z. S.* 1875, p. 4, pl. 1, fig. 3; *C. & S.* no. 15.
Macroglossa regulus, *Boisd. Spec. Gén.* i. p. 335; *C. & S* no. 14.

Head and thorax olive-green; basal segments of abdomen olive-green above, reddish yellow at sides; distal three segments black; the penultimate segment fringed with white; anal tufts black, tipped with fulvous. Fore wing dark red-brown, with a prominent antemedial dark band; two postmedial lines, one fine, the other diffused; an obscure dark mark on the costa before the apex, with a black streak below it. Hind wing bright red with dark border. Underside: palpi white; thorax ochreous; abdomen red-brown and brown, with lateral white tufts on 4th segment; wings red, with base yellow and outer border brown.

Hab. Kanara; Nilgiris, 3000–4000 feet. *Exp.* 44 millim.

180. **Macroglossa vialis**, *Butl. P. Z. S.* 1875, p. 240, pl. 36, fig. 5; *C. & S.* no. 12.

Differs from *fervens* in the head and thorax being rufous; abdomen red-brown, the terminal segments not black; the lateral yellow bands less developed; the lateral tufts rufous. Fore wing with the dark antemedial band less prominent and nearer the base; the postmedial lines less angled. Hind wing with the dark margin broader.

Hab. Kanara. *Exp.* 44 millim.

181. **Macroglossa gyrans,** *Wlk. Cat.* viii, p. 91; *Moore, Lep. Ceyl.* ii, pl. 93, fig. 1; *C. & S.* no. 13.

Differs from *fervens* in the head and thorax being grey-brown; the basal segments of abdomen red-brown above, each segment fringed by a few metallic blue scales, the penultimate segment with longer white fringe, the distal segments less black. Fore wing grey-brown, with three antemedial fine lines and three postmedial curved lines. Hind wing with the dark border diffused. Underside of thorax white; wings duller red, except at inner margin of hind wing.

Hab. Throughout India and Ceylon; Siam. *Exp.* 48 millim.

182. **Macroglossa affictitia,** *Butl. P. Z. S.* 1875, p. 240, pl. 36, fig. 7; *C. & S.* no. 11.

Macroglossa zena, *Boisd. Sphing.* p. 337; *C. & S.* no. 18 (part.).

Differs from *gyrans* in the terminal segments of the abdomen being brown above, with lateral black patches; no white fringe to penultimate segment. Fore wing with the antemedial lines replaced by a band as in *fervens*. Hind wing with the base brown, the marginal brown band broad. Underside with the inner area of hind wing yellower.

Hab. Simla; S. India; Ceylon. *Exp.* 52 millim.

B. *Hind wing with a yellow band.*

183. **Macroglossa stellatarum,** *Linn. Syst. Nat.* i, 2, p. 803; *Esp. Schmet.* ii. pl. 13, figs. 1–3 (larva and pupa); *C. & S.* no. 9.

Head, thorax, and abdomen pale grey-brown; abdomen with pale yellow lateral marks on 4th segment, the tufts at sides of distal segments black and white and well developed. Fore wing grey-brown, with one antemedial and one postmedial line prominent, the former waved, the latter curved; the first two antemedial lines obsolescent, as also are the first and third postmedial lines; the first two postmedial lines close together; the dark mark near apex almost obsolete. Hind wing dusky at base; medial area reddish yellow; outer margin reddish.

Larva purplish brown or greenish, with numerous white specks; a whitish subdorsal line ending in the bluish horn; a yellow subspiracular line; head ochreous.

Hab. Palæarctic region; N. Africa; Sind; Punjab; Cochin China. *Exp.* 44–54 millim.

184. **Macroglossa belis,** *Cram. Pap. Exot.* i, p. 147, pl. 94 c; *Butl. Trans. Zool. Soc.* ix, pl. 90, figs. 6 & 7 (larva and pupa); *C. & S.* no. 18 (part.).

Macroglossa troglodytus, *Boisd. Sphing.* p. 344.
Macroglossa opis, *Boisd. Sphing.* p. 345.
Macroglossum assimilis, *Swains. Zool. Ill.* ser. i. 1820, vol. i. pl. 64.
Macroglossa phyrrhula, *Boisd. Sphing.* p. 338.

Differs from *affictitia* in the head, thorax, abdomen, and fore

wings being redder brown; the two lines forming the antemedial band of the fore wing not filled in with black; the postmedial lines not so parallel, the second being nearer the first at the costa, the third at inner margin; the patch near apex reddish brown, with no dark streak below it. Hind wing with band reddish yellow.

Fig. 67.—*Macroglossa belis*, ♂. $\frac{1}{1}$.

The form *troglodytus* is rather narrower winged.

Larva black; the head red; a white subdorsal line; the sides spotted and streaked with red and yellow.

Hab. China and throughout India and Ceylon. *Exp.* 46–60 millim.

185. **Macroglossa belia**, *Hmpsn, Ill. Het.* ix, ined., pl. 157, fig. 15.

♀. Differs from *belis* in the antemedial band of the fore wing being much broader; the postmedial band broader and more angulate below the costa; the third postmedial line absent. Hind wing with the marginal dark border broader and more even. Underside: abdomen paler; wings with the transverse lines absent.

Hab. Trincomali, Ceylon. *Exp.* 58 millim.

186. **Macroglossa proxima**, *Butl. P. Z. S.* 1875, p. 4, pl. i, fig. 1; *C. & S.* no. 20; *Moore, Lep. Ceyl.* ii. pl. 91, figs. 1, 1 *a*, 1 *b* (larva and pupa).
Macroglossa luteata, *Butl. P. Z. S.* 1875, p. 241; *C. & S.* no. 19.
Macroglossa obscura (Up. Tenasserim), *Swinh. Trans. Ent. Soc.* 1890, p. 162 (nec *Butl.*).

Head, thorax, and abdomen rufous (in Malaccan and Tenasserim specimens dark brown); abdomen without the lateral black marks on distal segments; the anal tufts ruddy at tips. Fore wing with all the lines obsolescent, the postmedial lines less bent; the markings being reddish and ill-defined. Hind wing with the band pure yellow and narrower, so that the marginal dark border is broader. Underside as in *belis*.

Larva dark violet-brown, with white dorsal specks; a subdorsal yellow line on 2nd to 4th somites and 10th and 11th somites; white subspiracular spots on 7th to 11th somites; horn long and

tuberculate. In a later stage there are yellow and olive-brown transverse dorsal lines and yellow lateral spots, or the lateral spots may be pinkish dashed with yellow; the horn short.

Hab. Sylhet; Cachar; Kanara; Ceylon; Tenasserim; Malacca. *Exp.* 50–60 millim.

187. **Macroglossa semifasciata,** n. sp.

♂. Differs from *proxima* in having prominent black lateral patches to the abdomen; underside with paired ventral dark patches. Fore wing with the lower part of the interspace between the antemedial lines filled in with black; the postmedial lines excurved.

Hab. E. Pegu; Labuan. *Exp.* 62 millim. Type in B. M.

188. **Macroglossa bengalensis,** *Boisd. Sphing.* p. 341; *C. & S.* no. 28.
Macroglossa taxicolor, *Moore, P. Z. S.* 1879, p. 387; *id. Lep. Ceyl.* ii. pl. 90, fig. 3; *C. & S.* no. 22.
Macroglossa corythus (N. India), *Boisd. Sphing.* p. 339 (nec *Wlk.*).

Differs from *proxima* in the lines of the fore wing being much better defined, two of them forming an antemedial and two others a postmedial band filled in with reddish brown; the dark subapical streak well developed. Hind wing with the yellow band varying rather in width. Abdomen with a dark dorsal spot on the terminal segment.

Larva green, with a yellow streak from the 9th segment to the horn; or pale brown with black streaks above the yellow streak and stigmata, and others forming a broken subdorsal line.

Hab. Nilgiris, 6000 feet; Pondicherry; Ceylon. *Exp.* 56 millim.

189. **Macroglossa sitiene,** *Wlk. Cat.* viii, p. 92; *C. & S.* no. 24.
Macroglossa nigrifasciata, *Butl. P. Z. S.* 1875, p. 241, pl. 37, fig. 3; *C. & S.* no. 34.
Macroglossa orientalis, *Butl. Trans. Z. S.* ix, p. 528; *C. & S.* no. 27.

Differs from *bengalensis* in the thorax being olive-brown. Fore wing without the reddish tinge; the antemedial band filled in with black, and recurved along inner margin; the first two postmedial lines rather more angled below the costa; the black subapical streak and spot on terminal segment of the abdomen strongly developed. Underside with three transverse lines on hind wing.

The form *sitiene* has the yellow band on the hind wing rather narrower than in *nigrifasciata = orientalis*.

Hab. Cachar; Moulmein; Ceylon; Amboina; Formosa. *Exp.* 54–60 millim.

190. **Macroglossa glaucoptera,** *Butl. P. Z. S.* 1875, p. 241, pl. 36, fig. 9; *C. & S.* no. 35.

♂. Differs from *bengalensis* in the whole base of the fore wing

being black-brown, with no grey band between the lines; the whole exterior area also very dark, so that the medial and post-medial grey bands are obscured, and the lines and subapical markings obliterated. Hind wing with the yellow band very narrow. Head dark grey; thorax and abdomen bright rufous, the latter with yellow and black lateral markings on the anterior segments; the anal tuft black, with the tip rufous.

♀. Thorax and abdomen olivaceous; the fore wing not quite so dark as in the male; hind wing with the band broader.

Hab. Ceylon. *Exp.* 52 millim.

191. **Macroglossa walkeri,** *Butl. P. Z. S.* 1875, p. 4.
Macroglossa bombylans, *Boisd. Sphing.* p. 334; *C. & S.* no. 16.

Head, thorax, and abdomen olive-green, the last with yellow lateral bands on anterior segments, the 4th also with a rufous band; the terminal segments black with some rufous scales; the penultimate segment fringed with white; palpi and pectus white below; abdomen rufous, with white lateral tufts to 3rd and 4th segments. Fore wing red-brown, with a black antemedial band recurved along inner margin; the first two postmedial lines prominent; the third and subapical markings obsolescent. Hind wing with a narrow yellow band, which is broken at the middle in the male. Underside dark red-brown, with the lines very faint; the base of both wings white.

Hab. Japan; China; Himalayas, and throughout N. India. *Exp.*, ♂ 44, ♀ 52 millim.

192. **Macroglossa avicula,** *Boisd. Sphing.* p. 334.
Macroglossa obscuripennis, *Butl. Trans. Z. S.* ix, p. 633.

Only differs from *walkeri* in the fringe to penultimate segment of the abdomen and the lateral tufts on 3rd and 4th segments being yellow; the hind wing with the yellow band quite obsolete.

In *walkeri* and *avicula* the club of the antennæ in the males is very thick.

Hab. Java and ? Central India (*ap. Boisd.*). *Exp.* 44 millim.

*193. **Macroglossa lepcha,** *Butl. Trans. Z. S.* ix, p. 635; *C. & S.* no. 17.

Differs from *walkeri* in the terminal segments of the abdomen being olive-green, not black. Fore wing with the two postmedial lines more distinct, with a dark mark on the outer one at inner margin; the subapical marks more prominent, continued as a waved submarginal line to outer angle.

Hab. Calcutta. *Exp.* 56 millim.

194. **Macroglossa insipida**, *Butl. P. Z. S.* 1875, p. 242; *C. & S.* no. 10; *Moore, Lep. Ceyl.* ii, pl. 92, figs. 3 *a*, *b* (larva and pupa).
Macroglossa catapyrrha, *Butl. P. Z. S.* 1875, p. 243, pl. 36, fig. 6; *C. & S.* no. 26.

Head and thorax grey, with a rufous line on vertex; tegulæ rufous, fringed with grey; abdomen grey, the 2nd, 3rd, and 4th segments with yellow lateral bands and paired dark spots on the vertex; some darker marks on terminal segments; anal tuft grey at base, black at tip; palpi white below; thorax pale brown; abdomen rufous, with white lateral tufts. Fore wing grey; two indistinct subbasal lines; an antemedial curved dark band; three postmedial double curved lines; the subapical markings prominent and continued towards outer angle as a submarginal line. Hind wing with a yellow band constricted at middle. Underside rufous yellow; both wings with an irregular dark margin; hind wing with three transverse lines, of which there are traces on the fore wing.

In typical *insipida* there is a pinkish suffusion to the body and fore wing. Both forms occur in Ceylon, but *catapyrrha* only in N. India.

Larva pale red with purplish dots; a pale subdorsal line with dark margins; dark lateral oblique stripes from 3rd to 10th somites; horn black. Early stage dull brown.

Hab. N.W. Provinces; Sikhim; Bhutan; Ceylon. *Exp.* 40–48 millim.

195. **Macroglossa gilia**, *Herr.-Schäffer, Samml. aussereur. Schmett.* pp. 59, 79, pl. 23, fig. 107; *C. & S.* no. 25; *Hmpsn. Ill. Het.* ix, pl. 175, fig. 6 (larva).

Differs from *insipida* in the head, thorax, abdomen, and fore wing being grey without a rufous tinge; tegulæ grey, without the pale fringe. Fore wing with the antemedial band wide at inner margin and straighter.

Larva bright green; a pale dorsal stripe with brown line through it; a pale subdorsal stripe, with red-brown edge above; dorsal area speckled with brown; spiracles black, with oblique brown stripes between them; lateral area speckled with white; horn black, with yellow tip; legs pink.

Hab. Throughout India and Ceylon; Java; China. *Exp.* 44–54 millim.

196. **Macroglossa divergens**, *Wlk. Cat.* viii, p. 94; *Moore, Lep. Ceyl.* ii, pl. 92, fig. 2; *C. & S.* no. 33.

Head, thorax, and first two segments of abdomen rufous; tegulæ fringed with grey; 3rd and 4th segments of abdomen with lateral yellow bands and paired black dorsal spots; a black dorsal spot on terminal segment; underside reddish. Fore wing greyish brown; the antemedian band wide and recurved along inner margin; two

curved postmedial diffused bands, which are dark with red-brown on their inner sides; the subapical markings indistinct. Hind wing and underside as in *sitiene*.

Hab. Ceylon. *Exp.* 54 millim.

197. **Macroglossa imperator,** *Butl. P. Z. S.* 1875, p. 243, pl. 37, fig. 4; *C. & S.* no. 31.

Differs from *divergens* in the dark stripe on vertex of head and thorax being much broader and more prominent; tegulæ rufous, but without the pale fringe. Fore wing with the antemedial band much broader, especially at inner margin; the postmedial band black, much broader, and angled at vein 6, where it is joined to the subapical markings; the submarginal line obsolescent. Hind wing with the yellow band broader and hardly constricted at middle. Underside with the lines on hind wing rather more prominent.

Hab. Sikhim; Nilgiris; Ceylon. *Exp.* 74 millim.

198. **Macroglossa rectifascia,** *Feld. Reis. Nov.* pl. 75, fig. 7; *C. & S.* no. 32; *Moore, Lep. Ceyl.* ii, pl. 90, fig. 2.

Differs from *imperator* in the head and thorax being greyish black, the latter with a rufous patch posteriorly. Fore wing with the basal third blue-black; the two postmedial lines nearer together and not filled in with black, but angled so as to join the subapical markings; the outer area much clouded with black. Hind wing with the ground-colour almost black.

Hab. Formosa; Nilgiris; Ceylon. *Exp.* 48–64 millim.

199. **Macroglossa faro,** *Cram. Pap. Exot.* iii, p. 165, pl. 285 c.

Differs from *rectifascia* in the thorax and abdomen being pale red-brown; a rufous stripe on head and thorax. Fore wing lighter in colour, with the area beyond the postmedial lines less clouded with black.

Hab. Java and ? Coromandel (*ap. Cram.*). *Exp.* ♂ 76 millim.

200. **Macroglossa hemichroma,** *Butl. P. Z. S.* 1875, p. 243, pl. 37, fig. 1; *C. & S.* no. 29.

Differs from *faro* in having the whole basal half of the fore wing grey, with a sharp outwardly oblique margin defining the olive-brown outer area; the lines indistinct.

Hab. Sylhet. *Exp.* 70 millim.

Group II. Male with the costa of the hind wing produced into a triangular lobe covered with black scales, which is folded over on the upper surface of the wing.

201. **Macroglossa interrupta,** *Butl. P. Z. S.* 1875, p. 242, pl. 37, fig. 2; *C. & S.* no. 23.
Macroglossa aquila, *Boisd. Sphing.* p. 340; *C. & S.* no. 21.

♂. Head, thorax, and abdomen red-brown; abdomen with broad yellow and black lateral bands on the 3rd and 4th segments; underside bright red, with some white on the first three segments; small white lateral tufts; a white spot on the penultimate segment; palpi and pectus white. Fore wing brown, with a purplish gloss; the basal area suffused with black, obscuring the lines; the three postmedial lines present; a dark mark on the outer margin below the apex above the usual subapical streak. Hind wing with the yellow band much indented. Underside red; hind wing with three transverse lines.

Hab. Sikhim; Sylhet. *Exp.* 54 millim.

Genus **HEMARIS.**

Hemaris, *Dalm. Vet. Akad. Handl.* p. 207 (1816).

Type, *H. scabiosæ*, Zell., from Europe.

Range. Nearctic and Palæarctic regions.

Disk of wings usually hyaline; the palpi much shorter than in *Macroglossa*, the shape and antennæ similar. Fore wing with vein 10 absent, 9 sending some veinlets to the costa and anastomosing with 8 just before the apex; cell of hind wing short.

202. **Hemaris fuciformis,** *Linn. Syst. Nat.* i, (2) p. 803.
Hemaris simillima, *Moore, P. Z. S.* 1888, p. 391; *C. & S.* no. 4 a.

Head, thorax, and abdomen clothed with long, fine, olive-green pile; the 3rd and 4th segments of abdomen dark red; anal tufts black. Fore wing hyaline, with costa and inner margin olive-green; the outer margin with a broad dark-red band; a discocellular black band. Hind wing hyaline, the inner margin olive-green, the outer margin dark red; the cilia brown.

Hab. Europe; Kangra. *Exp.* 46 millim.

203. **Hemaris saundersi,** *Wlk. Cat.* viii, p. 83; *C. & S.* no. 4.

Differs from *fuciformis* in the head, thorax, and abdomen being normally scaled. Fore wing without the discocellular band; the

marginal band narrow at outer angle. Hind wing without the red border.

Hab. N.W. Himalayas; Punjab. *Exp.* 56 millim.

Fig. 68.—*Hemaris saundersi*, ♂. ½.

204. **Hemaris rubra**, n. sp.

Antennæ black; palpi black at sides, white below; head and thorax dull greenish olive; abdomen black, clothed with olive down above, the second segment with a broad white band, the 3rd, 4th, and 5th segments each with a slight white dorsal dash, lateral white tufts on 5th and 6th segments, anal tuft black. Fore wing red-brown, the base olive; traces of a pale medial oblique band; a dark marginal line. Hind wing bright red-brown, with a dark marginal line; cilia grey. Underside of head, thorax, and base of wings whitish. One male has the down on abdomen black.

Hab. Sind and Gurais Valleys, Kashmir (*Leech*); Balta (*McArthur*). *Exp.*, ♂ 48–52, ♀ 58 millim. Type in coll. Leech.

Genus CEPHONODES.

Cephonodes, *Hübn. Verz.* p. 131 (1816).

Type, *C. hylas*, Fabr.

Range. S. and W. Africa, Madagascar; Japanese, Indian, Malayan, and Australian regions.

Fore wing with vein 6 given off after the end of the cell, 10 absent, 9 sending veinlets to the costa and anastomosing with 8. Hind wing with the cell extremely short, veins 3 and 4 and 6 and 7 stalked.

205. **Cephonodes hylas**, *Linn. Mant.* p. 539; *Moore, Lep. Ceyl.* ii, pl. 93, figs. 4 *a*, *b* (larva and pupa); *C. & S.* no. 5.
Sphinx picus, *Cram. Pap. Exot.* ii, p. 83.
Macroglossum kingii, *McLeay, King's Surv. Austr.* App. p. 465.
Macroglossa cunninghami, *Schaufuss, Nunq. Otiosus*, i, p. 22.
Macroglossa apus, *Boisd. Faun. Ent. Madag.* pl. 79.

Differs from *Hemaris saundersi* in the marginal borders being very narrow and black; the abdomen varies in colour from yellow to green; in typical *hylas* the 3rd and 4th segments are bright red, in the variety *cunninghami* only the 4th is red, but there is more red on the terminal segments below.

Fig. 69.—*Cephonodes hylas*, ♂. 1/1.

Larva green; a white-bordered blue dorsal line and whitish subdorsal line ending in a yellow streak at base of horn; head and spiracles blue.

Hab. W. and S. Africa; Japan; throughout India to Australia and Gilbert Islands. *Exp.* 64 millim.

Genus **SATASPES**.

Sataspes, *Moore, Lep. E. I. C.* i, p. 261.

Type, *S. infernalis*, Westw.

Range. China; Himalayas; Assam; S. India.

Antennæ of nearly equal breadth throughout; hook short and slight; male with tufts of ciliæ very long. Palpi with the second joint of moderate size and roundly scaled. Fore wing much produced at apex; the discocellulars very oblique, with vein 5 given off below the centre; vein 10 absent, 9 sending veinlets to the costa and anastomosing with 8 before the apex. Anal tufts large.

206. **Sataspes infernalis**, *Westw. Cab. Or. Ent.* p. 61, pl. 30, fig. 3; *C. & S.* no. 1.

Sataspes uniformis, *Butl. P. Z. S.* 1875, p. 3; *C. & S.* no. 2.

Head greyish black; collar and thorax with golden-yellow hairs mingled with the black; abdomen black, with a few scattered yellow hairs, the last two or three segments yellow above; anal tuft black. Wings black; fore wing with a purplish gloss; the base grey; an antemedial grey band; costa of hind wing white. Underside uniform black.

In the form *uniformis* the last two segments of the abdomen are entirely or almost black.

Hab. Nepal; Sikhim; Bhutan; Assam; Burma; Coimbatore. *Exp.* 66 millim.

Fig. 70.—*Sataspes infernalis*, ♂. 1/1.

207. **Sataspes ventralis**, *Butl. P. Z. S.* 1875, p. 3; *C. & S.* no. 3.
Sataspes tagalica, *Boisd. Sphing.* p. 278, pl. 10, figs. 3, 4.

Differs from *infernalis* in the last four or five segments of the abdomen being yellow below. Fore wing with a steely green gloss.

Hab. Sikhim; Sylhet; Burma; Hongkong. *Exp.* 66 millim.

Genus **RHODOSOMA**.

Rhodosoma, *Butl. Trans. Z. S.* ix, p. 534 (1876).

Type, *R. triopus*, Westw.

Range. Sikhim; Assam.

Antennæ gradually decreasing to the hook, which is long. Palpi with the apex quadrately scaled. Abdomen truncate at apex; the anal and lateral tufts very short. Fore wing much produced and broad. Hind wing also broad.

208. **Rhodosoma triopus**, *Westw. Cab. Or. Ent.* p. 14, pl. 6, fig. 4; *C. & S.* no. 36.

Head and thorax olive-green or fulvous with two yellow stripes; abdomen black, with lateral crimson bands on segments 2 to 5, that on the 4th being the most extensive; fulvous dorsal and lateral spots on segments 5 to 8; anal tuft black, the lateral tufts fulvous. Fore wing brownish black, crossed by three antemedial outwardly oblique black bands; a large white quadrate spot beyond the discocellulars; postmedial, submarginal, and marginal black bands. Hind wing black, with a large white patch on the costa before the apex; some fulvous postmedial specks on the nervules; anal angle with a crimson and white patch. Underside: thorax fulvous; abdomen red, with four pairs of black

spots. Fore wing suffused with red-brown. Hind wing red, with medial and postmedial black lines.

Hab. Sikhim; Assam. *Exp.* 68–78 millim.

Fig. 71.—*Rhodosoma triopus*, ♂. 1/1.

Species formerly recorded as Indian, which are omitted.

Cephonodes cyaniris, Kirby, C. & S. no. 6. This was a *lapsus calami* for *cynniris*, Guér. Icon. Ins. p. 495, from Mauritius. The Dublin specimen recorded from Sylhet was without locality, and is either that species or *janus*, Miskin, P. Roy. Soc. Qd. viii, pt. 1, 1890, p. 6, from Australia.

Macroglossa fringilla, Boisd., C. & S. no. 30. This species is allied to the Australian *errans*, and is probably not Indian. The markings of the fore wing are too vaguely described for identification.

Sphinx bubastus, Cram., C. & S. no. 72, is probably a *Caliomma* from America.

Chærocampa stipularis, Swinh., C. & S. no. 87, = *Deilephila komarovi*, Chr. Rom. Mém. ii, p. 169, pl. xv, fig. 2, is from Afghanistan.

Smerinthus kindermanii, Led., C. & S. no. 151, is from Kandahar.

Hyloicus asiaticus, Butl., C. & S. no. 181, = *pinastri*, Linn. The register of the type, which was bought from a dealer, is "probably Scinde," and is almost certainly wrong.

Sphinx sanguinosa, Martyn, C. & S. no. 184, is *Empyreuma lichas*, Fabr., a Zygænid from the W. Indies.

Sphinx minus, Fabr., C. & S. no. 67. The description is too vague for identification, and the habitat may not be India.

Sphinx asiliformis, Fabr., C. & S. nos. 41, 205, is from the W. Indies, and is probably a Zygænid.

Family NOTODONTIDÆ.

A family of moths superficially resembling the *Noctuidæ*.

Mid tibia with one pair of spurs; hind tibia with two pairs; tarsi short and hairy. Fore wing with vein 1 *a* forming a fork with 1 *b* at the base; 1 *c* absent; vein 5 from the middle of discocellulars, or rarely from just below upper angle of cell*. Hind wing with two internal veins; vein 5 from the centre of the discocellulars or rarely absent; 8 free from the base, curved, and running close along the subcostal nervure or joined to it by a bar.

Larva without the anal prolegs, and carrying the anal somites more or less erect; these often bear paired processes, and are sometimes swollen; the other somites often prominently humped.

Pupa naked.

Fig. 72.—Larva of *Cerura liturata*. $\frac{1}{1}$. (From Moore, Lep. Ceyl. ii, pl. 120, fig. 1 *a*.)

Key to the Genera.

A. Fore wing with vein 5 from middle of discocellulars.
- *a*. Fore wing with no tuft of scales on inner margin.
  - a'. End of abdomen with a tuft of long spatulate scales.
    - a^2. Fore wing with vein 10 anastomosing with 8 to form the areole .... 1. TARSOLEPIS, p. 126.
    - b^2. Fore wing with vein 9 anastomosing with 8 to form the areole .... 2. DUDUSA, p. 128.
  - b'. End of abdomen without a tuft of spatulate scales.
    - a^2. Hind wing with vein 5 present.
      - a^3. Fore wing produced and narrow.
        - a^4. Fore wing with the inner margin produced into a triangular lobe. 10. NORRACA, p. 137.
        - b^4. Fore wing with the inner margin produced into a rounded lobe.. 9. TURNACA, p. 136.
        - c^4. Fore wing with the inner margin evenly curved.
          - a^5. Fore wing with the apex acute.
            - a^6. Fore wing very long.
              - a^7. Fore wing with no areole. 5. BARADESA, p. 131.
              - b^7. Fore wing with an areole. 6. RACHIA, p. 131.
            - b^6. Fore wing shorter.
              - a^7. Palpi upturned .... 12. PYDNA, p. 138.
              - b^7. Palpi porrect .... 13. RAMESA, p. 142.

* Except in the genus *Cyphanta*, which may be the connecting link with the *Noctuidæ*.

b^5. Fore wing with the apex rounded.
a^6. Fore wing with vein 9 anastomosing with 8 to form the areole.
a^7. Fore wing with vein 5 from centre of discocellulars.
a^8. Palpi slight and fringed with hair .... 11. NIGANDA, p. 138.
b^8. Palpi broad and rounded 8. GARGETTA, p. 135.
b^7. Fore wing with vein 5 from near upper angle of cell .... 23. DAMATA, p. 156.
b^6. Fore wing with vein 10 anastomosing with 8 to form the areole .... 7. PHALERA, p. 133.
b^3. Fore wing not produced and broad.
a^4. Fore wing with no areole.
a^5. Fore wing with the outer margin very irregular .... 17. ZARANGA, p. 146.
b^5. Fore wing with the outer margin evenly curved.
a^6. Hind wing with veins 2 and 3 from cell.
a^7. Fore wing with vein 7 given off nearer the apex than 10 .... 18. FENTONIA, p. 147.
b^7. Fore wing with vein 7 given off further from the apex than 10.
a^8. Fore wing broad, the outer margin not crenulate.
a^9. Hind wing with veins 7 and 8 not bent upwards to the costa . 19. STAUROPUS, p. 149.
b^9. Hind wing with veins 7 and 8 bent upwards to the costa ...... 21. LIPAROPSIS, p. 154.
b^8. Fore wing narrower, the outer margin crenulate. 27. PHEOSIA, p. 160.
b^6. Hind wing with veins 2 and 3 stalked .... 25. METASCHALIS, [p. 158.
b^4. Fore wing with an areole.
a^5. Fore wing with vein 9 anastomosing with 8 to form the areole.
a^6. Fore wing with vein 6 from angle of cell .... 14. ZANA, p. 144.
b^6. Fore wing with vein 6 from beyond angle of cell.
a^7. Fore wing with the areole long; vein 6 from before the end of it.
a^8. Fore wing with the apex acute .... 15. ANTICYRA, p. 144.
b^8. Fore wing with the apex rounded ...... 26. CHADISRA, p. 159.

b^7. Fore wing with the areole short, vein 6 from the end of it .... 22. CERURA, p. 155.

b^5. Fore wing with vein 10 anastomosing with 8 to form the areole.

a^6. Fore wing with vein 6 from beyond the angle of cell.

a^7. Fore wing with vein 5 from near upper angle of cell.................. 24. DICRANURA, p. 157.

b^7. Fore wing with vein 5 from centre of discocellulars.

a^8. Palpi short and porrect. 16. ANTHEUA, p. 145.

b^8. Palpi upturned, reaching vertex of head .. 20. SOMERA, p. 153.

b^6. Fore wing with vein 6 from angle of cell.

a^7. Fore wing with the areole short, vein 7 from its end. 34. BESAIA, p. 171.

b^7. Fore wing with the areole long, vein 7 from before its end .... 35. CLEAPA, p. 171.

b^2. Hind wing with vein 5 absent.

a^3. Fore wing with the apex rounded. 36. ICHTHYURA, p. 172.

b^3. Fore wing with the apex acute and produced .... 3. HAPIGIA, p. 129.

b. Fore wing with a prominent tuft of scales on middle of inner margin.

a'. Hind wing with veins 2 and 3 from cell.

a^2. Fore wing with no areole.......... 28. NOTODONTA, p. 162.

b^2. Fore wing with an areole.

a^3. Fore wing with the outer margin irregular; thorax with an erect tuft of hair .... 4. NADATA, p. 130.

b^3. Fore wing with the outer margin crenulate .... 30. LOPHOPTERYX, [p. 166.

c^3. Fore wing with the outer margin not crenulate .... 29. HYPERÆSCHRA, [p. 163.

b'. Hind wing with veins 2 and 3 stalked.. 31. MEGACERAMIS, [p. 167.

c. Fore wing with prominent tufts of scales at middle of inner margin and at outer angle.

a'. Fore wing with vein 10 anastomosing with 8 to form the areole .... 33. SPATALIA, p. 168.

b'. Fore wing with vein 9 anastomosing with 8 to form the areole .... 32. APELA, p. 168.

B. Fore wing with vein 5 from lower angle of cell................................ 37. CYPHANTA, p. 174.

Genus TARSOLEPIS.

Tarsolepis, *Butl. A. M. N. H.* (4) x, p. 125 (1872).

Type, *T. remicauda*, Butl.

Range. Sikhim; Borneo.

Palpi porrect, first two joints hairy; third short and naked.

Hind femur with a tuft of long hair from near the extremity. Abdomen long, with a large tuft of spatulate scales at extremity. Fore wing long, with the apex acute, the outer margin crenulate; vein 6 from angle of cell, the areole short; veins 9 and 10 given off near the apex. Hind wing with the cell short; vein 8 connected with 7 by a bar; traces of forked veinlets in the cell of both wings.

SECT. I. Antennæ of male simple.

209. **Tarsolepis fulgurifera**, *Wlk. Cat.* xiv, p. 1347; *Butl. Ill. Het.* vi, pl. 106, fig. 9; *C. & S.* no. 1201.

♂. Palpi and head pale and dark brown; a black band behind the antennæ; thorax and abdomen fawn-colour; dark transverse lines across the pro-, meso-, and metathorax; abdomen with lateral segmental fuscous bands. Fore wing fawn-colour, the inner area dark brown from the lower angle of cell to inner margin near the base and to outer margin below the apex; two oblique dark subbasal lines from median nervure to vein 1 *b*; a black longitudinal mark above inner margin on the dark area, outlined with pale and black lines; a whitish streak below vein 2, with a rufous line through it; a silvery streak below vein 4; black streaks in the interspaces, growing short towards the apex; outer margin whitish, with ochreous and brown lines; the cilia fulvous. Hind wing fuscous; the basal area whitish, with a large fuscous spot at end of cell. Hind leg wanting.

Hab. Nága Hills. *Exp.* 120 millim.

SECT. II. Antennæ of male with the proximal two thirds bipectinate.

210. **Tarsolepis remicauda**, *Butl. A. M. N. H.* (4) x, p. 125, pl. viii.

♂. Differs from *fulgurifera* in the head being without the black

Fig. 73.—*Tarsolepis remicauda*, ♂. ½.

band; the abdomen more fuscous. Fore wing more uniformly suffused with brown; the black mark above inner margin reduced

to a slight streak; a large triangular silvery mark in the interno-median interspace, outlined with rufous brown; a similar mark between veins 3 and 4; outer area dull brown, with a waved sub-marginal line. Hind wing more suffused with fuscous over the basal area. Hind leg with the femoral tuft brilliant scarlet.

Hab. Sikhim; Borneo. *Exp.* 80 millim.

Genus DUDUSA.

Dudusa, *Wlk. Cat.* xxxii, p. 446 (1864).

Type, *D. nobilis*, Wlk., from China, Malacca, Sumatra.

Range. China; Sikhim; Nága Hills; Malacca; Sumatra.

Palpi porrect, the first two joints hairy, the third short and naked; antennæ with the branches short and stiff, and only extending to just beyond the middle; abdomen with a large terminal tuft of spatulate scales. Hind femur with no tuft. Fore wing long, the apex acute, outer margin crenulate; vein 6 from angle of cell; the areole long, with vein 10 given off from it. Hind wing with a bar between veins 7 and 8; traces of forked veinlets in the cell of both wings.

211. **Dudusa sphingiformis**, *Moore, P. Z. S.* 1872, p. 577, pl. 34, fig. 1; *C. & S.* no. 1188.

♂. Antennæ and front of head black; thorax pale ochreous; collar and tegulæ with slight dark lines; abdomen black; the

Fig. 74.—*Dudusa sphingiformis*, ♂. 1/1.

terminal tuft brownish. Fore wing pale ochreous, suffused with

brown and with black towards outer margin; some black strigæ on costa, and blackish streaks and lunules towards outer margin; a doubly curved pale postmedial line; pale lunulate submarginal and marginal lines. Hind wing smoky black, with a darker spot at end of cell; indistinct waved submarginal and marginal pale lines. Underside pale, with a prominent black lunulate band to both wings.

Hab. Sikhim, Nága Hills. *Exp.* 96 millim.

Genus **HAPIGIA**.

Hapigia, *Guen. Noct.* ii. p. 376 (1852).

Type, *H. nodicornis*, Guen., from S. America.
Range. S. America; Madras.

Palpi upturned, the second joint fringed with very long hairs, third joint naked. Antennæ ciliate. Fore wing long, the apex acute, the outer margin very obliquely rounded; veins 7, 8, 9, 10 stalked; no areole. Hind wing with vein 5 absent; 6 and 7 stalked; 8 connected by a bar with 7.

The typical section has the third joint of palpi free and vein 6 of fore wing from angle of cell.

Sect. II. Palpi with the hair on 2nd joint extending to apex of 3rd joint. Fore wing with vein 6 from above angle of cell.

212. **Hapigia obliqua**, *Wlk. Cat.* xxxiii, p. 766; *C. & S.* no. 2335.

♀. Head and thorax pale chestnut-brown; apex of palpi black.

Fig. 75.—*Hapigia obliqua*, ♀. ¾.

Fore wing pale chestnut-brown, with four very oblique indistinct

lines the orbicular and reniform spots elongate; a dark lunulate submarginal line incurved below the costa. Abdomen and hind wing fuscous brown.

Hab. Madras. *Exp.* 104 millim.

Genus **NADATA.**

Nadata, *Wlk. Cat.* v, p. 1062 (1855).

Type, *N. gibbosa*, Abb., from N. America.

Range. N. America; Japan; Himalayas.

Palpi with the first two joints thickly fringed with scales, the third naked and very short. Antennæ with the branches short, stiff, and reaching two thirds of length. Thorax with a long upright tuft of hair on the vertex. Fore wing with the outer margin crenulate or irregular; vein 6 given off beyond the cell; 9 and 10 anastomosing with 8 to near apex; a tuft of scales on inner margin. Hind wing with veins 6 and 7 stalked, 8 running close along 7 before end of cell.

Fore wing with outer margin more irregular in the Indian species than in the typical American and Japanese forms.

213. **Nadata niveiceps**, *Wlk. Cat.* xxxii, p. 554; *C. & S.* no. 1189.

♀. Head, thorax, and fore wing very pale grey-brown; abdomen orange-yellow above. Fore wing with an indistinct brown mark

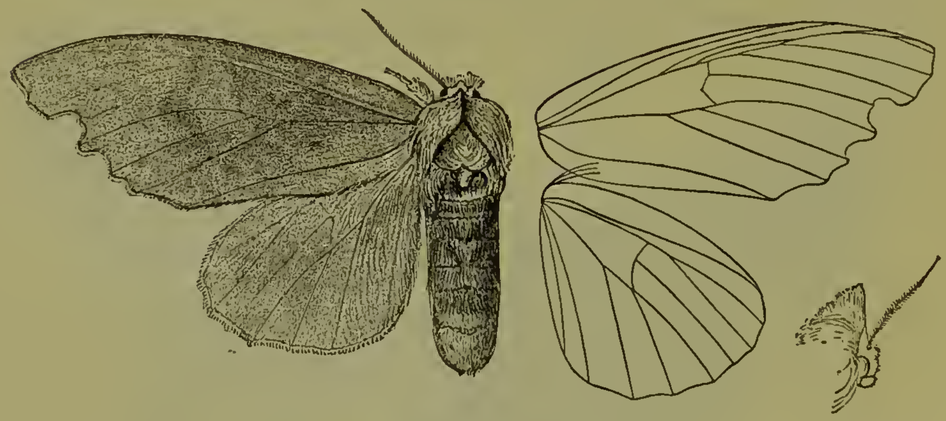

Fig. 76.—*Nadata niveiceps*, ♀. ½.

at end of cell and faint traces of a postmedial line; cilia in the emarginations white. Hind wing pale yellow.

Hab. N.W. Himalayas. *Exp.* 100 millim.

Genus BARADESA.

Baradesa, *Moore, P. Z. S.* 1883, p. 16.

Type, *B. lithosioides*, Moore.
Range. Sikhim; Sylhet.

Palpi upturned, reaching above vertex of head, the first two joints clothed with hair, the third very short and naked. Fore wing long and narrow, the apex acute; vein 6 given off after the angle of cell; 9 and 10 anastomosing with 8 to near apex. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near end of cell.

214. **Baradesa lithosioides,** *Moore, P. Z. S.* 1883, p. 17, pl. 5, fig. 2; *C. & S.* no. 1216.

♂. Head and thorax brown; abdomen yellow, the extremity greyish brown. Fore wing brown, suffused with darker brown,

Fig. 77.—*Baradesa lithosioides*, ♂. 1/1.

with numerous black lunulate marks, forming ill-defined lines; a series of marginal black loops. Hind wing bright yellow; the outer area fuscous; the cilia yellow.

Hab. Sikhim; Sylhet. *Exp.* 88 millim.

Genus RACHIA.

Rachia, *Moore, Lep. Atk.* p. 70 (1879).

Type, *R. plumosa*, Moore.
Range. Sikhim.

Fore wing very long, the costa arched, apex acute; veins 6, 7, 8, 9, 10 stalked. Hind wing with veins 6 and 7 stalked; 8 running close beside 7 at middle of cell. Femora and tibiæ very hairy.

SECT. I. Palpi short and porrect: antennæ of male with the branches very long, slender, and extending to apex.

215. **Rachia plumosa,** *Moore, Lep. Atk.* p. 70; *P. Z. S.* 1879, p. 405, pl. 34, fig. 1; *C. & S.* no. 1209.

♂. Head and collar dark brown; thorax and abdomen paler brown. Fore wing pale red-brown, the whole wing suffused with dark brown except the inner area, a submarginal band, and some postmedial streaks below the costa and in and beyond end of cell,

Fig. 78.—*Rachia plumosa*, ♂. $\frac{1}{1}$.

these last with chestnut streaks on them; indistinct waved postmedial and submarginal lines; vein 1 streaked with black: outer margin dark, irrorated with grey and spotted with black. Hind wing brown, with an indistinct curved postmedial line.

Hab. Sikhim. *Exp.* 79 millim.

SECT. II. Palpi longer and upturned; antennæ of male with the branches stiff, the terminal one-fourth filiform.

216. **Rachia striata,** n. sp.

♂. Palpi black at sides. Head, thorax, and abdomen pale brown. Fore wing pale brown, slightly clouded with fuscous, especially towards apex; black streaks above veins 6 and 4; an indistinct fuscous postmedial band recurved at vein 3 to base of inner margin; a black streak on centre of inner margin; a black band from centre of outer margin to inner margin before outer angle; some dark grey on outer margin, widest at outer angle. Hind wing pale, with an indistinct postmedial line and a short submarginal band at anal angle.

Hab. Sikhim (*Möller*). *Exp.* 80 millim. Type in coll. Elwes.

Genus PHALERA.

Phalera, *Hübn. Verz.* p. 146 (1816).

Type, *P. bucephala*, Linn., from Europe.

Range. Europe; Japan; China; throughout India and Burma; Java.

Palpi upturned, the first two joints clothed with hair, the third short and naked; antennæ fasciculate in male, ciliate in female; abdomen long. Fore wing long and narrow; vein 5 given off from near upper angle of cell; 6 from beyond the angle; 9 and 10 anastomosing strongly with 8. Hind wing with vein 5 from below angle of cell; 6 and 7 on a long stalk; 8 running close along 7 before the end of cell.

217. **Phalera parivala,** *Moore, Lep. E. I. Co.* p. 434; *Butl. Ill. Het.* vi, pl. 103, fig. 2; *C. & S.* no. 1518.

♂. Palpi dark brown; frons chestnut; vertex of head buff-coloured; thorax buff, fringed with dark brown; the tegulæ grey, mixed with brown; abdomen brown, some specimens with indistinct fuscous segmental bands. Fore wing dark brown, with traces of waved dark lines; the basal and outer areas suffused with grey;

Fig. 79.—*Phalera parivala*, ♂. $\frac{1}{1}$.

basal area defined by an indistinct waved rufous line; orbicular and reniform spots somewhat indistinct; a large apical brownish-buff patch extending as a series of lunulate submarginal marks to vein 3; an indistinct waved submarginal black line; cilia bright chestnut. Hind wing fuscous; the cilia chequered white and fuscous.

Hab. Sikhim; Nilgiris. *Exp.* 80–90 millim.

218. **Phalera sangana**, *Moore, Lep. E. I. Co.* p. 433; *Butl. Ill. Het.* vi, pl. 103, fig. 4; *C. & S.* no. 1521.
Phalera arenosa, *Butl. A. M. N. H.* (5) vi, p. 66; *C. & S.* no. 1514.
Phalera stigmigera, *Butl. A. M. N. H.* (5) vi, p. 66; *C. & S.* no. 1523.

♂ differs from *parivala* in the frons being black, the vertex of head white, the vertex of thorax dark brown; the abdomen with prominent dark segmental bands. Fore wing suffused over the whole area with grey or ochreous grey; the subbasal line black; the submarginal lunulate band darker, with its lower part attenuated; a purplish mark near outer angle.

Hab. Sikhim; Bhutan. *Exp.* 82–93 millim.

219. **Phalera torpida**, *Wlk. Cat.* xxxii, p. 431.

♂ differs from *sangana* in the vertex of the head being buff; the abdomen uniform fuscous; fore wing slightly suffused with grey; the apical patch pale and small, and only extending to vein 5, no mark near outer angle; hind wing darker fuscous.

Hab. Sikhim. *Exp.*, ♂ 62–67, ♀ 78 millim.

220. **Phalera procera**, *Feld. Reis. Nov.* pl. 96, fig. 1; *C. & S.* no. 1519.
Phalera bobi, *Swinh. P. Z. S.* 1885, p. 302, pl. 21, fig. 6; *C. & S.* no. 1515.

Differs from *sangana* in the fore wing having a large dark patch on the inner margin near base; the apical patch large, rounded on its inner side and terminating at vein 4.

In the form *bobi*, from Bombay and Burma, the hind wing is fuscous, with traces of a pale medial line; in *procera*, from Sikhim, it is much paler.

Hab. Sikhim; Sylhet; Nágas; Bombay; Burma. *Exp.*, ♂ 81, ♀ 84 millim.

221. **Phalera raya**, *Moore, Lep. E. I. Co.* p. 433; *Butl. Ill. Het.* vi, pl. 103, fig. 1; *C. & S.* no. 1520.
Phalera grotei, *Moore, Lep. E. I. Co.* p. 434; *C. & S.* no. 1517.
Phalera cossoides, *Wlk. Trans. Ent. Soc.* ser. 3, i, p. 80; *C. & S.* no. 1516.
Acrosema amboinæ, *Feld. Reis. Nov.* pl. 96, fig. 2; *C. & S.* no. 1513.

Differs from *procera* in the frons being buff; the fore wing heavily suffused with silvery grey on basal and inner areas; the apical patch paler.

Larva bluish white, with a paired subdorsal series of setiferous warts; lateral area yellow, with a red band; prolegs black, red at extremities; head reddish; stigmata black; pairs of anterior and posterior setiferous processes, which disappear in the final stage, when the ground-colour becomes white instead of blue and yellow.

Hab. Sikhim; Nágas; Calcutta; Simla; Bombay; Nilgiris. *Exp.*, ♂ 76, ♀ 82 millim.

Genus GARGETTA.

Gargetta, *Wlk. Cat.* xxxii, p. 455 (1864).
Thacona, *Wlk. Journ. Linn. Soc.* vii, p. 169 (1864).
Porsica, *Wlk. Cat.* xxxv, p. 1823 (1866).

Type, *G. costigera*, Wlk.
Range. Himalayas; Sylhet; Burma.

Palpi upturned, reaching vertex of head, the first two joints hairy, the third short and naked. Fore wing long and narrow, with a tuft of long hair in the male from below vein 1, near the base; vein 5 from the middle of discocellulars; vein 9 anastomosing with 8 to near apex; the areole short, with vein 10 given off from it. Hind wing with the costa arched at centre; vein 5 from centre of discocellulars; 6 and 7 stalked, 8 nearly touching 7 at middle of cell.

SECT. I. (*Gargetta*). Male with branches of antennæ of moderate length and reaching apex.

222. **Gargetta costigera**, *Wlk. Cat.* xxxii, p. 455; *Butl. Ill. Het.* vi, pl. 103, fig. 6; *C. & S.* no. 4821.

Dull brown; the head darker. Fore wing with the apex and inner areas slightly suffused with grey; some short dark waved

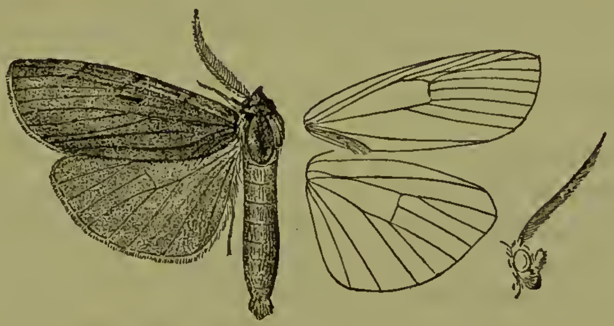

Fig. 80.—*Gargetta costigera*, ♂. 1/1.

lines from the costa; a black longitudinal streak at end of cell; an indistinct waved submarginal line with grey points on it; a series of marginal white specks.

Hab. Mandi, N.W. Himalayas; Sikhim; Moulmein. *Exp.*, ♂ 46, ♀ 54 millim.

223. **Gargetta nagaensis**, n. sp.

♂ differs from *costigera* in the head, thorax, and fore wing being more uniform darker brown; fore wing with the outer margin more erect; the streak in cell less prominent; a straight white marginal line to both wings instead of the grey points.

Hab. Nága Hills, 6000 feet (*Doherty*). *Exp.* 62 millim. Type in coll. Elwes.

224. **Gargetta curvaria**, n. sp.

♂ differs from *costigera* in the head being pale. Fore wing with a greyish subbasal patch on inner margin, generally with a dark patch beyond it; no black streak at end of cell; the orbicular and reniform marks well defined and ochreous; the waved line with grey points postmedial; the marginal points dark. Hind wing with traces of a medial pale band.

Hab. Sikhim; Momeit. *Exp.* 42 millim. Type in B. M.

Sect. II. (*Thacona*). Male with branches of antennæ very short; the terminal half filiform.

225. **Gargetta ingens**, *Wlk. Cat.* xxxv, p. 1823; *Butl. Ill. Het.* vi, pl. 104, fig. 9; *C. & S.* no. 4816.

♂. Head and collar black-brown; thorax and abdomen pale grey-brown; the extremity of the latter ochreous. Fore wing grey-brown, with large dark patches at middle of costa and apex with strigæ between them; dark patches suffused with grey below end of cell and at outer angle; reniform indistinctly outlined with grey; an indistinct pale waved submarginal line. Hind wing slightly suffused with fuscous.

Hab. Sikhim; Sylhet. *Exp.* 56 millim.

Sect. III. Fore wing with vein 11 bent and touching areole; branches of antennæ short, the terminal half filiform.

226. **Gargetta albimacula**, n. sp.

♂. Dull brown. Fore wing with very indistinct waved subbasal and antemedial lines; a blackish streak between the orbicular and reniform; a waved postmedial line with white points, and a large white spot on inner margin; a pale irregular submarginal line; a series of marginal white points; a dark streak from apex. Hind wing with the basal half whitish, with a dark medial line: the outer area fuscous; a marginal series of white points.

Hab. Sikhim. *Exp.* 50 millim. Type in B. M.

Genus TURNACA.

Turnaca, *Wlk. Cat.* xxxii, p. 454 (1864).
Ambadra, *Swinh., C. & S.* p. 183 (1887).

Type, *T. acuta*, Wlk.

Range. Bengal and throughout S. India.

Palpi upturned, reaching vertex of head; the first two joints smoothly scaled, the third short; antennæ with the branches short, serrate at apex. Fore wing long and narrow, the apex very acute in male, less so in female; inner margin with a rounded lobe; vein 6 from angle of cell; 7, 8, 9, 10 stalked; no areole. Hind wing with veins 6 and 7 stalked; a bar between veins 7 and 8.

227. **Turnaca acuta**, *Wlk. Cat.* xxxii, p. 454; *C. & S.* no. 1511.
Corma ernestina, *Swinh. P. Z. S.* 1885, p. 302, pl. 20, fig. 2; *C. & S.* no. 1233.
Pydna indica, *Moore, Lep. Atk.* p. 67; *C. & S.* no. 1183.

Palpi dark at sides; head, thorax, and fore wing pale brown, irrorated with greyish fuscous; the last with an indistinct series of postmedial dark specks curved inwards above inner margin; abdomen and hind wing paler.

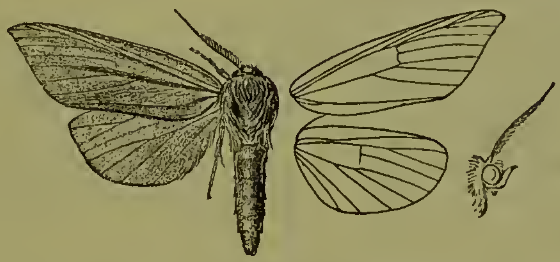

Fig. 81.—*Turnaca acuta*, ♂. 1/1.

Some specimens have the apex less acute than others; the form *indica* is paler, with the submarginal specks more prominent.

Hab. Bombay; Ranchee; Calcutta; Canara; Bangalore. *Exp.*, ♂ 54, ♀ 42 millim.

Genus NORRACA.

Norraca, *Moore, P. Z. S.* 1881, p. 340.

Type, *N. longipennis*, Moore.
Range. Ceylon.

Palpi upturned, the first two joints smoothly scaled, the third short; antennæ slightly ciliate. Abdomen long. Fore wing long and narrow, with a dentate lobe on inner margin; vein 6 from angle of cell; 9 and 10 anastomosing with 7 and 8 to form a small areole. Hind wing with veins 6 and 7 on a long stalk, 8 running close along 7 to near end of cell.

Fig. 82.—*Norraca longipennis*, ♂. 1/1.

228. **Norraca longipennis**, *Moore, P. Z. S.* 1881, p. 340.

♂. Head, thorax, and fore wing ochreous, the last with traces

of four or five waved fuscous lines beyond the middle; abdomen and hind wing with a reddish tinge.

Larva sphingiform, with a horn on anal somite.

Hab. Ceylon; Penang. *Exp.* 48 millim.

Genus **NIGANDA.**

Niganda, *Moore, Lep. Atk.* p. 63.

Type, *N. strigifascia*, Moore.

Range. Sikhim.

Palpi upturned, the first two joints smoothly scaled. Antennæ minutely ciliated in female. Fore wing very long and narrow, the apex rather acute; vein 6 from angle of cell; 9 anastomosing with 8 to form the areole from which 10 is given off. Hind wing with veins 6 and 7 stalked; 8 running close along 7 before the end of the cell.

229. **Niganda strigifascia,** *Moore, Lep. Atk.* p. 63, pl. 3, fig. 15; *C. & S.* no. 1153.

♂. Pale ochreous brown; the outer area of wings greyish. Fore wing with a striated white streak from the base to beyond end

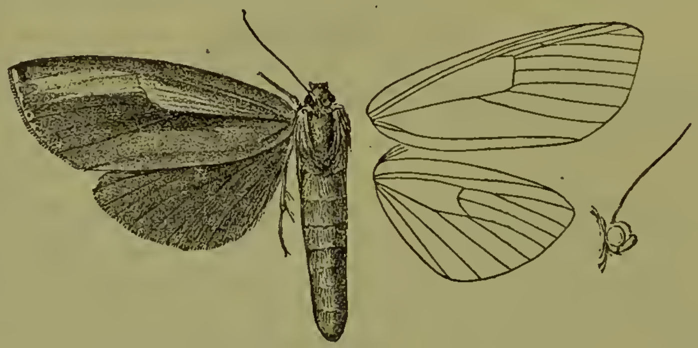

Fig. 83.—*Niganda strigifascia*, ♀. 1/1.

of cell, angled at end of cell, and pale yellow from thence to apex; postmedial and marginal series of black specks. Hind wing reddish fuscous.

♀. Pale reddish ochreous. Fore wing with a pale yellow streak from near the base of the cell to outer margin, narrowing at the discocellulars; faint traces of a postmedial darker line and series of specks beyond it.

Hab. Sikhim. *Exp.*, ♂ 55, ♀ 62 millim.

Genus **PYDNA.**

Pydna, *Wlk. Cat.* vii, p. 1753 (1855).
Bireta, *Wlk. Cat.* vii, p. 1754 (1855).
Torona, *Wlk. Cat.* xxxii, p. 467 (1864).
Menapia, *Wlk. Cat.* xxxii, p. 461 (1864).
Ceira, *Wlk. Cat.* xxxii, p. 462 (1864).

Type, *P. testacea*, Wlk.

Range. Japan; China; and throughout India, Ceylon, and Burma.

Palpi upturned, reaching above vertex of head, fringed with hair in front, the 3rd joint short. Fore wing produced, longer and narrower in female than male; vein 6 from the angle of cell; 9 or both 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 before the end of cell.

SECT. I. (*Pydna*). Fore wing with the areole short; vein 10 given off after it.

A. *Female with antennæ slightly pectinated.*

230. **Pydna testacea,** *Wlk. Cat.* vii, p. 1754; *C. & S.* no. 1184.
Menapia kamadena, *Moore, P. Z. S.* 1865, p. 812; *C. & S.* no. 1512.

♂. Pale ochreous; palpi black, fringed with white. Fore wing suffused with fuscous; a black speck at base and another at end of cell; an indistinct subbasal waved and curved line; a highly waved and curved antemedial line; two very oblique lunulate indistinct lines from the apex to centre of inner margin; a waved submarginal indistinct line; a black speck at end of cell. Abdomen and hind wing reddish ochreous.

♀ with the fore wing longer, the abdomen and hind wing white, ochreous, or reddish fuscous.

Another form is paler, the fore wing slightly irrorated with black scales; the markings almost obsolete; female with a dark blotch in the cell and another beyond it.

Hab. Sikhim. *Exp.*, ♂ 60–66, ♀ 62–96 millim.

*231. **Pydna decurrens,** *Moore, Lep. Atk.* p. 66; *C. & S.* no. 1144.

♀. Differs from the pale ochreous form of *testacea* in having a sharply angulated antemedial band; a curved postmedial band sending two streaks to a submarginal maculate line; an oblique streak from apex.

Hab. Khásis. *Exp.* 53 millim.

Fig. 84.—*Pydna longivitta*, ♂. 1/1.

232. **Pydna longivitta,** *Wlk. Cat.* vii, p. 1754; *C. & S.* no. 1186.
Menapia xanthophila, *Wlk. Cat.* xxxii, p. 462; *Butl. Ill. Het.* vi, pl. 104, fig. 1; *C. & S.* no. 1187.

♂. Head and thorax rufous; abdomen ochreous. Fore wing ochreous, with a curved ferruginous band from the base to the apex; numerous indistinct waved lines. Hind wing fuscous-brown.

Hab. Simla; Sikhim; Nágas; Rangoon. *Exp.* 56 millim.

233. **Pydna nana,** *Swinh. P. Z. S.* 1889, p. 407.

♂ differs from *longivitta* in the band of the fore wing terminating before the apex; two series of ferruginous submarginal specks; costa and cilia rufous.

Hab. N. Canara; Nilgiris. *Exp.* 42 millim.

234. **Pydna pallida,** *Butl. A. M. N. H.* (4) xx, 1877, p. 473; *id. Ill. Het.* ii, pl. 25, figs. 10, 11.
Pydna notata, *Swinh. Trans. Ent. Soc.* 1891, p. 479, pl. xix, fig. 16.

♂. Differs from the pale form of *testacea* in not having the black speck at end of cell of fore wing; some orange scales along median nervure and vein 4; the inner area suffused with brown; submarginal and marginal series of black specks.

♀ with the apex of fore wing generally more produced and acute; a black cell-spot sometimes present.

Hab. Japan; Chekiang; Sikhim. *Exp.*, ♂ 50–54, ♀ 54–56 millim.

B. *Male antennæ fasciculate, female ciliated; the palpi shorter and slight.*

235. **Pydna ochracea,** *Moore, Lep. Atk.* p. 65; *C. & S.* no. 1147.

♀ uniform orange-yellow; the palpi blackish at sides.

Hab. Sikhim. *Exp.* 79 millim.

236. **Pydna galbana,** *Swinh. P. Z. S.* 1886, p. 438, pl. xl, fig. 5; *C. & S.* no. 1185.

♀. Ochreous white; the vertex of thorax and abdomen brown; fore wing with a black spot below the centre of cell and one above centre of inner margin; a postmedial series of six spots and a marginal series of smaller spots.

Hab. Sikhim. *Exp.* 34 millim.

SECT. II. (*Ceira*). Fore wing with the areole long, vein 10 given off from it; palpi and legs less hairy.

A. *Male with the antennæ fasciculate.*

237. **Pydna metaphæa,** *Wlk. Cat.* xxxii, p. 462; *Moore, Lep. Ceyl.* ii, pl. 119, fig. 3; *C. & S.* no. 1146.

Differs from *testacea* in the thorax and fore wing being pale ochreous, with less rufous irroration; some specimens have a large

black spot below the origin of vein 2 and the short streak beyond the cell prominent, in others these marks are quite obsolete; the rufous line from apex and the submarginal line better defined. Abdomen and hind wing darker brown, without the red tinge.

Hab. Ceylon. *Exp.*, ♂ 50, ♀ 62 millim.

238. **Pydna eupatagia**, n. sp.

♂. Head and thorax olive-brown; collar and patagia violaceous grey; abdomen red-brown, the extremity grey. Fore wing whitish; the inner area violaceous grey; a dark speck near the base and streak on median nervure; traces of an antemedial dentate line; a reddish patch in end of cell; a denticulate postmedial dark line met by an oblique streak from the apex and with some rufous suffusion beyond it; a series of submarginal black specks. Hind wing fuscous with the apex whitish.

The form from the N.W. Himalayas is paler, with the markings of the fore wing less prominent.

Hab. N.W. Himalayas (*Harford*); Sikhim (*Knyvett*). *Exp.*, ♂ 52, ♀ 36 millim. Type in coll. Knyvett.

239. **Pydna aurata**, *Moore, Lep. Atk.* p. 64; *C. & S.* no. 1150.

♂. Head and thorax orange fulvous, the collar grey; abdomen fuscous. Fore wing fulvous yellow, the basal and costal areas golden; an orange streak from the base below median nervure; some oblique orange strigæ from the costa; a black spot at end of cell; a postmedial curved series of dark specks; traces of a submarginal line; a marginal series of white lunules. Hind wing fuscous; the cilia ochreous.

Hab. Sikhim; Khásis. *Exp.* 50 millim.

240. **Pydna fasciata**, *Moore, Lep. Atk.* p. 66; *C. & S.* no. 1182.

♂. Head and thorax ochreous brown; abdomen deep fuscous, the dorsal tufts on first two segments long. Fore wing ochreous, irrorated with brown and suffused with fuscous; some fine pale streaks inthe cell; a dark mark with some grey scales on it below the cell; the reniform spot pale; a double postmedial series of brown specks and marginal series of black specks. Hind wing dark fuscous.

Hab. Khásis. *Exp.* 50 millim.

241. **Pydna sikkima**, *Moore, Lep. Atk.* p. 64; *C. & S.* no. 1152.

Head and thorax bright ochreous; collar pinkish grey; metathorax with a fuscous tuft; abdomen dull ochreous, fuscous at extremity, and with a long tuft of hair. Fore wing bright ochreous, with a slight fuscous suffusion on inner and outer areas; traces of a discoidal spot and medial and postmedial waved lines; an indistinct series of postmedial specks on the nervules; two very indistinct waved submarginal lines; a marginal series of black specks, promi-

nent towards apex. Hind wing smoky grey, the margin and cilia ochreous. Underside yellow, the disk and inner area of both wings suffused with black.

Hab. Sikhim. *Exp.*, ♂ 62, ♀ 64 millim.

242. **Pydna nigropuncta,** n. sp.

♂. Head, thorax, and abdomen brown. Fore wing pale brownish ochreous, with a slight red-brown suffusion; traces of waved ante- and postmedial red-brown lines, two indistinct series of postmedial specks on the nervules; a prominent dark spot below vein 5, with a red-brown streak from it to the apex; traces of a submarginal line; a marginal series of black specks. Hind wing fuscous, the cilia ochreous. Underside fuscous; the costa of fore wing and outer margin of both wings yellow.

Hab. Sikhim (*Möller*). *Exp.* 46 millim. Type in coll. Elwes.

243. **Pydna nigrofasciata,** n. sp.

♂. Differs from *nigropuncta* in being pale olive-brown without the red-brown suffusion. Fore wing with a prominent black fascia from the base to near centre of outer margin, with some fuscous suffusion above it; a short black oblique subapical streak; the marginal series of specks indistinct. Hind wing paler. Underside with the outer margin of both wings slightly ochreous.

Hab. Sikhim (*Elwes*). *Exp.* 47 millim. Type in coll. Elwes.

*244. **Pydna basistriga,** *Moore, Lep. Atk.* p. 65; *C. & S.* no. 1143.

♂. Differs from *nigropuncta* in having the head, thorax, abdomen, and fore wing pale yellow; the hind wing whitish.

Hab. Sikhim. *Exp.* 56 millim.

B. *Male with the antennæ bipectinate, the branches long.*

245. **Pydna ferrifera,** *Wlk. Cat.* xxxii, p. 468; *C. & S.* no. 1115.
Ceira junctura, *Moore, Lep. Atk.* p. 65; *C. & S.* no. 1145.
Ceira postica, *Moore, Lep. Atk.* p. 66; *C. & S.* no. 1148.

♂. Yellowish white; differs from *longivitta* in the band of the fore wing being much more diffused and ill defined; the veins streaked with ferruginous; the inner series of submarginal specks curved to the centre of inner margin; the cilia pale. Hind wing yellowish white.

Hab. Sikhim. *Exp.* 48 millim.

Genus **RAMESA.**

Ramesa, *Wlk. Cat.* v, p. 1016 (1855).

Type, *R. tosta*, Wlk.

Range. Sikhim; Burma; Ceylon.

Palpi obliquely porrect, the second joint hairy. Antennæ

serrate and fasciculate. Fore wing rather narrow; vein 6 from the angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of the cell.

246. **Ramesa tosta,** *Wlk. Cat.* v, p. 1017; *Butl. Ill. Het.* vi, pl. 104, fig. 5; *C. & S.* no. 1527.
Ramesa luridivitta, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 12.

Head and thorax red-brown. Fore wing ochreous, slightly suffused with red-brown, and streaked with dark brown along the

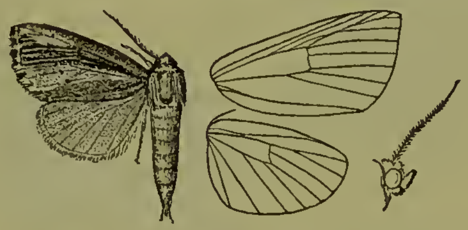

Fig. 85.—*Ramesa tosta*, ♂. 1/1.

basal half of the costal area to the lower angle of the cell, and extending along veins 4 and 5 to the outer margin; shorter streaks below the apex, and a paler streak along inner margin; postmedial and submarginal series of dark specks; cilia fuscous. Abdomen and hind wing paler.

The Ceylon race *luridivitta* is much darker; the head, thorax, and fore wing wholly dark brown, the last with rufous streaks from lower end of cell to outer margin and apex.

Hab. Burma; Ceylon. *Exp.*, ♂ 32, ♀ 36 millim.

247. **Ramesa fuscipennis,** n. sp.

♂. Head and thorax dull brown; abdomen with a reddish tinge. Wings dull brown: fore wing with the reniform spot small and indistinct, and with pale outline; an indistinct postmedial series of specks; a marginal black series with white specks inside them.

Hab. Burma. *Exp.* 44 millim. Type in coll. Moore.

*248. **Ramesa divisa,** *Moore, Lep. Atk.* p. 65; *C. & S.* no. 1151.

♂. Differs from *fuscipennis* in being red-brown. Fore wing with pale flesh-coloured streaks on inner area and towards apex; some dark specks towards inner margin within the postmedial series. Hind wing with some dark spots on outer margin.

Hab. Sikhim. *Exp.* 56 millim.

*249. ? **Ramesa albistriga,** *Moore, Lep. Atk.* p. 64; *C. & S.* no. 1149.

♂. Brown. Head, thorax, and a tuft at end of abdomen grey-brown. Fore wing with some grey streaks along median nervure;

an indistinct double waved antemedial dark line; a dark spot at end of cell; a pinkish streak from lower angle of cell to outer margin; four or five indistinct waved postmedial lines; a marginal series of dark specks.

Hab. Sikhim. *Exp.* 50 millim.

Genus **ZANA.**

Zana, *Wlk. Cat.* vii, p. 1700 (1855).

Type, *Z. lignosa*, Walk.

Range. Almora; Madras.

Palpi slight and porrect. Antennæ serrate in female. Fore wing broad, the outer margin crenulate; vein 6 from the angle of cell; 9 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of the cell.

250. **Zana lignosa,** *Wlk. Cat.* vii, p. 1700; *Butl. Ill. Het.* vi, pl. 104, fig. 4; *C. & S.* no. 1510.

♀. Head and thorax pale buff; abdomen bright orange above, with a paired series of lateral black spots. Fore wing grey, with pale

Fig. 86.—*Zana lignosa*, ♀. 1/1.

yellow patches below and beyond the cell; brown streaks along median nervure and on discocellulars; a highly dentate brown line from apex to lower angle of cell; brown streaks on each side of the veins on outer margin; a waved marginal black line. Hind wing pale yellow.

Hab. Almora; Madras. *Exp.* 44–56 millim.

Genus **ANTICYRA.**

Anticyra, *Wlk. Cat.* v, p. 1091 (1855).
Dinara, *Wlk. Cat.* vii, p. 1699 (1855).

Type, *A. combusta*, Wlk.

Range. Philippines; N.W. Himalayas; Karáchi; Poona; Java.

Palpi slight and porrect. Antennæ fasciculate. Fore wing broad, the apex rather acute; vein 6 given off beyond the end of

cell; 9 anastomosing with 8 to form the areole, which is long. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of the cell.

251. **Anticyra combusta**, *Wlk. Cat.* v, p. 1092; *Moore, Lep. E. I. Co.* pl. 13 *a*, fig. 5, and pl. 23, figs. 3, 3 *a* (larva); *C. & S.* no. 1135.
Dinara lineolata, *Wlk. Cat.* vii, p. 1700.

Head and collar buff; thorax brown with the patagia grey; abdomen orange above with a series of black lateral spots; the

Fig. 87.—*Anticyra combusta*, ♂. 1/1.

penultimate segment fuscous, the terminal ochreous. Fore wing pale yellow; the inner half irrorated with a few black scales and suffused with brown, especially between veins 2 and 4; brown streaks below the costa, in the cell, and between the nervules of the yellow area towards outer margin; a waved marginal brown line. Hind wing fuscous.

Larva. Blue-green, with a few long hairs: head black.

Hab. Philippines; N.W. Himalayas; Karáchi; Poona; Java. *Exp.*, ♂ 52–60, ♀ 54–72 millim.

Genus **ANTHEUA.**

Antheua, *Wlk. Cat.* iii, p. 766 (1855).

Type, *A. varia*, Wlk., from Natal.

Range. S. Africa; throughout India and Ceylon; Java.

Palpi slight and porrect. Antennæ pectinate to apex, the branches short. Fore wing broad, the apex rather acute; vein 6 from angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of cell.

252. **Antheua servula**, *Drury, Ins. Exot.* ii, p. 20, pl. xi, fig. 4; *C. & S.* no. 1497.
Antheua discalis, *Wlk. Cat.* iii, p. 767; *Moore, Lep. E. I. Co.* pl. 13 *a*, fig. 4, and pl. 23, figs. 2, 2 *a* (larva); *C. & S.* no. 1136.

Antheua exanthemata, *Moore, Lep. Ceyl.* ii, p. 111, pl. 119, fig. 2; *C. & S.* no. 1137.

Head, thorax, and abdomen fulvous yellow suffused with rufous. Fore wing fulvous yellow, irrorated with a few rufous scales, a brown patch below the end of cell; costa and inner margin

Fig. 88.—*Antheua servula*, ♂. 1/1.

narrowly rufous; outer margin broadly rufous. The hind wing may be any shade of colour between ochreous white and dark brownish fuscous, the latter being the form *exanthemata*.

Larva. Brown with a yellow lateral line and paired subdorsal and sublateral red spots; the stigmata white; the head streaked with black.

Hab. Throughout India, Ceylon, and Burma; Java. *Exp.* 46–50 millim.

Genus **ZARANGA.**

Zaranga, *Moore, Trans. Ent. Soc.* 1884, p. 357.

Type, *Z. pannosa*, Moore.

Range. N.W. Himalayas.

Palpi short and porrect. Antennæ bipectinated to near apex, the branches short. Fore wing with the outer margin highly irregular; vein 6 from angle of cell; 7, 8, 9, 10 stalked. Hind wing with the outer margin waved, and excised towards anal angle; vein 5 from middle of discocellulars; 6 and 7 stalked; a bar connecting 7 and 8.

253. **Zaranga pannosa,** *Moore, Trans. Ent. Soc.* 1884, p. 357; *C. & S.* no. 1217.

♂. Head, thorax, and abdomen brown; metathorax fringed with yellow; antennæ tipped with white; tarsi banded with white. Fore wing dark brown, a white speck at base; a large pale red-brown patch on inner margin, nearly joined by a similar patch occupying all the apical area except the costa and apex; an indistinct antemedial waved line; black lines on each side of discocellulars; an indistinct waved postmedial line, white at costa

Fig. 89.—*Zaranga pannosa*, ♂. $\frac{1}{1}$.

and towards inner margin. Hind wing fuscous; the disk whitish two pale streaks above anal angle.

Hab. Simla. *Exp.* 74 millim.

Genus **FENTONIA.**

Fentonia, *Butl. Trans. Ent. Soc.* 1881, p. 20.

Type, *F. ocypete*, Brem.

Range. Japan; Amur; N.W. Himalayas; Sikhim; Canara.

Palpi upturned and short, the first two joints fringed with hair, the third short and naked. Abdomen long. Fore wing rather long; veins 6, 7, 8, 9, 10 stalked, or 10 from cell; 7 given off nearer the apex than 10; no areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of cell.

SECT. I. Hind wing with the stalk of veins 6 and 7 short.

a. *Antennæ of male with branches short and reaching the apex.*

254. **Fentonia argentifera,** *Moore, P. Z. S.* 1865, p. 813; *C. & S.* no. 1167.

Head and thorax grey, marked with brown; abdomen yellow

Fig. 90.—*Fentonia argentifera*, ♂. $\frac{1}{1}$.

with the tip grey. Fore wing silvery grey; two pairs of subbasal

waved brown or rufous lines; medial and postmedial waved lines: a double submarginal lunulate line; a highly waved marginal line. Hind wing yellow at base and inner area; the outer area brownish fuscous; the cilia whitish.

Hab. Sikhim, 7000 to 10,000 feet. *Exp.*, ♂ 60, ♀ 62 millim.

255. **Fentonia brunnea**, *Moore, Lep. Atk.* p. 60; *C. & S.* no. 1169.
Heterocampa basalis, *Moore, Lep. Atk.* p. 61; *C. & S.* no. 1168.

♂. Head, thorax, and abdomen red-brown, the thorax brighter. Fore wing with the base pale; a subbasal fuscous band with waved edges; medial area pale red-brown; an indistinct much waved postmedial line; outer area fuscous and red-brown; a pale oblique streak from the apex and submarginal series of black specks. Hind wing reddish brown.

The form *basalis* has the ground-colour of fore wing greyish.

Hab. Sikhim. *Exp.* 48 millim.

*256. **Fentonia obliquiplaga**, *Moore, Lep. Atk.* p. 61; *C. & S.* no. 1172.

♂. Head and thorax blackish; abdomen yellowish brown, the extremity blackish. Fore wing pale vinous brown; an oblique subbasal black band with dentate edges; a broad marginal blackish band with waved inner edge and series of submarginal black specks on it. Hind wing pale brown, the inner area yellowish.

Hab. Sikhim. *Exp.* 60 millim.

257. **Fentonia apicalis**, *Moore, Lep. Atk.* p. 68, pl. iii, fig. 12; *C. & S.* no. 1525.

Head and thorax greyish black-brown; antennæ fulvous. Fore wing pale chestnut-brown, suffused with darker brown near the base; numerous black spots between the veins; a pale band from the costa before the apex narrowing to outer margin above the angle; the outer area suffused with fuscous. Hind wing fuscous brown.

Hab. Sikhim. *Exp.* 48 millim.

b. *Antennæ of male with terminal one-third serrate.*

258. **Fentonia ocypete**, *Brem. Bull. Acad. Pétersb.* iii. p. 481 (1861).
Fentonia lævis, *Butl. Trans. Ent. Soc.* 1881, p. 20.

♂. Head, thorax, and abdomen pale grey. Fore wing grey; a black streak on base of median nervure; double antemedial dentate dark lines; double postmedial lines excurved round end of cell and angled inwards below the cell; an indistinct dentate submarginal line; a dark marginal line. Hind wing pale grey; a slight brown patch at anal angle; a marginal brown line and a line through the cilia.

Hab. Japan; Amur; Simla. *Exp.* 48 millim.

SECT. II. Hind wing with the stalk of veins 6 and 7 very long; antennæ of male with the branches longer.

259. **Fentonia tenebrosa**, *Wlk. Cat.* vii, p. 1725; *C. & S.* no. 1089.
Phineca canities, *Swinh. P. Z. S.* 1889, p. 407.

♂. Head, thorax, and abdomen grey-brown. Fore wing grey, suffused with fuscous scales; two curved antemedial black lines with a few silvery scales on them, the upper part of the space between them filled in with fuscous; traces of a postmedial curved line; a series of submarginal black streaks on the veins. Hind wing fuscous.

Hab. N. Canara. *Exp.* 28–30 millim.

Genus STAUROPUS.

Stauropus, *Germar, Prod.* p. 45 (1811).
Netria, *Wlk. Cat.* vi, p. 1504 (1855).

Type, *S. fagi*, Linn., from Europe.

Range. Europe; Japan; throughout India and Ceylon; Andamans; Java.

Palpi short and slight, or rarely longer and upturned. Fore wing broad, the subcostal vein hairy on underside; vein 6 from angle of cell; 7, 8, 9, 10 stalked; no areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near end of cell.

SECT. I. Male with antennæ fasciculate; female simple.

260. **Stauropus maculatus**, *Moore, Lep. Atk.* p. 60; *Waterh. Aid,* ii, pl. 132, fig. 6; *C. & S.* no. 1171.

Head, collar, and patagia grey; thorax brown. Fore wing grey, the medial and apical areas suffused with reddish brown; one subbasal and seven medial waved dark lines, the middle lines red-brown and ill defined on the disc; a submarginal series of dark spots; cilia chequered grey and brown. Abdomen and hind wing pale with a reddish tinge, the former grey at extremity.

Hab. Sikhim; Nágas. *Exp.*, ♂ 44, ♀ 53 millim.

SECT. II. (*Stauropus*). Male with antennæ pectinated, female ciliated.

261. **Stauropus alternus**, *Wlk. Cat.* v, p. 1020; *Moore, Lep. Ceyl.* ii, pl. 119, figs. 1, 1*a*, *b* (larva); *C. & S.* no. 1129.
Stauropus indicus, *Moore, P. Z. S.* 1879, p. 404; *C. & S.* no. 1131.
Stauropus albescens, *Moore, P. Z. S.* 1879, p. 404; *C. & S.* no. 1128.

♂. Head and thorax brownish grey; abdomen grey-brown, with the dorsal tufts on first six segments darker. Fore wing

brownish grey, with indistinct ante- and postmedial pale waved lines; a submarginal series of rust-red spots with pale lunules inside them. Hind wing whitish, with the costal and inner areas

Fig. 91.—*Stauropus alternus*, ♂. $\frac{1}{1}$.

brown; both wings with a marginal series of pale and red-brown lunules. Underside brown.

♀ with the hind wing uniform brown.

The form *albescens*, from Bombay and Ganjam, is more uniform pale grey; the hind wing hardly suffused with brown.

Larva dark red-brown; a pale dorsal line; grey subdorsal streaks on 5th and 6th somites; paired dorsal prominences on 6th to 8th somites; the terminal somite swollen and carried over the back, with two angular processes from the extremity; the anal prolegs absent; 2nd and 3rd pairs of legs long.

Hab. Sylhet; Bombay; Ganjam; Canara; Ceylon; Rangoon; Java. *Exp.*, ♂ 44, ♀ 62 millim.

262. **Stauropus sikkimensis**, *Moore, P. Z. S.* 1865, p. 811, pl. 43, fig. 5; *C. & S.* no. 1132.
Stauropus berberisæ, *Moore, P. Z. S.* 1888, p. 400; *Butl. Ill. Het.* vii, pl. 125, fig. 4; *C. & S.* no. 1130 A.

♂. Differs from *alternus* in the antemedial line of the fore wing being more irregular, the postmedial line more curved and less dentate, and both with dark outlines; a spot of dark raised scales below the middle of the cell, two towards the end of it; two submarginal series of spots of dark raised scales and marginal lunular series. Hind wing whitish, the costal area dark.

♀ darker than the male.

Typical *sikkimensis*, from Sikhim, has the base of fore wing greyish; the medial area of fore wing and costa of hind wing suffused with dark green; in *berberisæ*, from Kangra, the fore wing is wholly suffused with brown.

Larva similar to that of *alternus*.

Hab. Kangra; Umballa; Sikhim. *Exp.*, ♂ 44; ♀ 60 millim.

263. **Stauropus dentilinea**, *Hmpsn. Ill. Het.* viii, p. 60, pl. 141, fig. 10.

Head, thorax, and abdomen grey and fuscous. Fore wing grey, irrorated with fuscous scales, and slightly suffused with brown on

basal and outer areas; very indistinct ante- and postmedial waved dark lines; a submarginal series of dark spots; a prominent dentate marginal dark line. Hind wing fuscous; the costa pale.

Hab. Nilgiri plateau; Ceylon. *Exp.* 45 millim.

264. **Stauropus apicalis**, *Moore, Lep. Atk.* p. 59; *C. & S.* no. 1130.

♂. Fore wing comparatively longer than in the preceding species. Head and collar fuscous brown; thorax grey; abdomen fulvous brown, the extremity grey. Fore wing grey, irrorated with fuscous scales; a brown streak on the middle of the costa, one postmedial, and one subapical below the costa. Hind wing pale fuscous brown.

Hab. Sikhim. *Exp.* 62 millim.

SECT. III. (*Netria*). Both sexes with antennæ pectinated.

265. **Stauropus viridescens**, *Wlk. Cat.* vi. p. 1504; *Moore, Lep. Ceyl.* ii, pl. 120, figs. 2, 2*a* (larva and pupa).
Netria griseata, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 14.
Stauropus virescens, *Moore, P. Z. S.* 1879, p. 404; *C. & S.* no. 1134.

♂. Head and thorax green; abdomen brown, with the extremity green. Fore wing green; two indistinct subbasal waved dark lines, two antemedial, three postmedial, and one submarginal; the orbicular and reniform spots paler. Hind wing fuscous brown. Underside paler.

♀ with the fore wing suffused with brown on basal area, and on medial area between the first antemedial and last postmedial lines.

The form *griseatus*, from Trincomali, Ceylon, has the female very much paler, with hardly a trace of green suffusion; fore wing with the ground-colour greyish white, the bands brown; hind wing pale and but slightly suffused with fuscous.

Larva thickened at middle; anal segment bifid; green, with a dorsal purple line; the spiracles white; a sublateral yellow line; gulæ, fore legs, and mid claspers purple.

Hab. Sikhim; Nágas; Ceylon; Java. *Exp.*, ♂ 50–70, ♀ 82–100 millim.

266. **Stauropus pallidifascia**, n. sp.

♂. Head and thorax brown, grizzled with white and the central part of collar fringed with white; abdomen paler. Fore wing with the basal area grey-green, bounded by a double antemedial brown line; a double postmedial line excurved between veins 2 and 4, the area between the two double lines pale ochreous suffused with brown scales, and with the orbicular and reniform

spots indistinctly paler; outer area grey-green; a waved dark submarginal line. Hind wing whitish, the costal and inner areas suffused with red-brown, the apex grey-green.

Hab. Sikhim. *Exp.* 46 millim. Type in coll. Knyvett.

267. **Stauropus albivertex**, n. sp.

♂. Palpi and sides of head black, the vertex white; thorax dark iron-grey; abdomen greyish brown, the basal segments red-brown. Fore wing iron-grey; an irregularly waved antemedial line and waved oblique postmedial line. Hind wing nearly white; some dark hairs on inner area, and some brown on the margin at anal angle.

Hab. Gurais Valley, Kashmir (*Leech*). *Exp.* 70 millim. Type in coll. Leech.

268. **Stauropus fasciatus**, *Moore, Lep. Atk.* p. 58; *C. & S.* no. 980.

Palpi black, fringed with white; head ochreous white; thorax grey and fuscous; abdomen brownish grey, the extremity grizzled. Fore wing grey irrorated with fuscous, some darker suffusion at base; three indistinct waved antemedial lines; a postmedial irregular line, expanding into ill-defined blotches below the costa, at middle and inner margin; a waved submarginal dark line. Hind wing pale, with a large apical dark spot.

A male from Sikhim has the collar white, and a large white blotch below the centre of the costa of fore wing in and below the cell: in a female from Sikhim the head also is white; the fore wing wholly white, except the basal area, the inner area, and a patch on the costa beyond the middle, which are brown.

Hab. Dalhousie; Sikhim; Khandála; Andamans. *Exp.*, ♂ 52, ♀ 54 millim.

269. **Stauropus griseus**, *Hmpsn. Ill. Het.* viii, p. 59, pl. 141, fig. 16.
Lymantria canescens, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 6.

♀. Antennæ brownish ochreous; head and collar dark brown; thorax and fore wing dark brown grizzled with grey, the latter with traces of dark ante- and postmedial lines. Abdomen and hind wing paler brown.

♂ with the whole fore wing, except the costa, much darker brown as far as the postmedial line; the waved submarginal line more distinct.

Hab. Nilgiris, southern slopes, 3000 feet; Ceylon. *Exp.*, ♂ 50, ♀ 63 millim.

270. **Stauropus orbifer**, n. sp.

♀. Head red-brown; thorax and abdomen pure white. Fore wing red-brown with a purplish tinge; the whole inner area,

embracing the basal half of cell and area below vein 2, white with buff patches on median nervure and towards outer angle; a large round white apical patch with buff centre; the red-brown area with some indistinct lines on it; the orbicular and reniform spots outlined with grey; a series of white submarginal specks. Hind wing red-brown; the basal and inner area whitish.

Hab. Sikhim. *Exp.* 55 millim. Type in coll. Knyvett.

271. **Stauropus basiniger,** *Moore, P. Z. S.* 1865, p. 805; *C. & S.* no. 1002.

♀. Pale brown; collar blackish. Fore wing with the basal area blackish, bounded by a curved black line; a double incurved waved postmedial line, prominent towards inner margin; a submarginal series of black lunules.

Hab. Dehra Dun; Balasore. *Exp.* 64 millim.

272. **Stauropus vinaceus,** *Moore, P. Z. S.* 1879, p. 404, pl. 33, fig. 1; *C. & S.* no. 1133.

♀. Head, thorax, and abdomen grey-brown. Fore wing brown, slightly irrorated with grey; the basal area pale; traces of a double oblique waved antemedial line and postmedial double series of specks; two red-brown streaks beyond the cell; a submarginal dark line bordered inwardly with white, curved in its upper portion, dentate towards inner margin. Hind wing brown.

Hab. "India." *Exp.* 56 millim.

273. **Stauropus plagiviridis,** *Moore, Lep. Atk.* p. 61; *C. & S.* no. 1173.

♂. Head and thorax dark red-brown; antennæ and abdomen pale red-brown, the latter greyish at extremity. Fore wing red-brown, with subbasal, ante- and postmedial highly irregular broad bands of a beautiful silvery green, with bright green lines on them; a waved submarginal green line. Hind wing ochreous; an indistinct line from middle of costa to anal angle, beyond which the area is suffused with red-brown.

Hab. Sikhim. *Exp.* 54 millim.

Genus SOMERA.

Somera, *Wlk. Cat.* iv, p. 882 (1855).

Type, *S. viridifusca*, Wlk.

Range. Sikhim; Sylhet; Ceylon.

Palpi upturned, reaching vertex of head; the first two joints fringed with hair. Antennæ with the branches long and reaching the apex. Legs hairy. Fore wing broad, the subcostal nervure

and cell clothed with long hairs on underside; vein 6 given off just beyond the angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of the cell.

274. **Somera viridifusca**, *Wlk. Cat.* iv, p. 882; *Butl. Ill. Het.* vi, pl. 104, fig. 7; *C. & S.* no. 1059.

♂. Palpi brown; vertex of head and thorax green; abdomen fuscous, with the extremity green. Fore wing bright green, with a brown patch below and beyond the end of cell; two subbasal

Fig. 92.—*Somera viridifusca*, ♂. 1/1.

waved dark lines; two antemedial; four postmedial and one submarginal, the last with brownish blotches on it. Hind wing fuscous brown.

The brown patch on the fore wing is often absent.

Hab. Sikhim; Sylhet; Ceylon. *Exp.* 58 millim.

Genus **LIPAROPSIS**, nov.

Type, *L. postalbida*, Hmpsn.

Range. Nága Hills.

Palpi slight and porrect. Antennæ with the branches long in male. Mid tibiæ with one pair of spurs; hind tibiæ without spurs. Fore wing with vein 2 curved; 5 from near upper angle of cell; 6, 7, 8, 9, 10 stalked. Hind wing broad, the costa arched; vein 5 from near the upper angle of cell; 6 and 7 stalked; 7 and 8 recurved upwards to the costa.

275. **Liparopsis postalbida**, n. sp.

♂. Head and thorax grey; vertex of thorax slightly suffused with brown; abdomen white. Fore wing with the base white, edged by some diffused dark scales, beyond which the area is suffused with red-brown to a double indistinct outwardly-oblique antemedial line, a broad medial white area irrorated with dark

scales, and continued along the costa to the apex, an indistinct double waved postmedial line; the outer area from vein 4 to outer angle suffused with red-brown. Hind wing pure white.

Fig. 93.—*Liparopsis postalbida*, ♂. $\frac{1}{1}$.

Hab. Nága Hills, 6000 feet (*Doherty*). *Exp.* 38 millim. Type in coll. Elwes.

Genus CERURA.

Cerura, *Schrank, Fauna Boica*, ii, 2 Abth. p. 155 (1802).
Harpyia, *Ochs. Eur. Schmett.* iii, p. 19 (1810).

Type, *C. furcula*, Schr., from Europe.

Range. N. America; Europe; China; throughout India and Ceylon.

Palpi slight and porrect; antennæ with the branches long and reaching the apex. Legs hairy. Fore wing broad; veins 6 and 10 given off from end of areole, which is short and formed by 9 anastomosing with 8. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to near the end of the cell.

276. **Cerura liturata**, *Wlk. Cat.* v, p. 988; *Butl. Ill. Het.* vi, pl. 106, fig. 7; *C. & S.* no. 1127.
Cerura damodara, *Moore, P. Z. S.* 1865, p. 812; *C. & S.* no. 1123.
Harpyia kandyia, *Moore, Lep. Ceyl.* ii, p. 108, pl. 120, figs. 1, 1 *a* (larva and pupa); *C. & S.* no. 1126.
Harpyia wisei, *Swinh. Trans. Ent. Soc.* 1891, p. 139, pl. viii, fig. 3.

Pure white; palpi black; collar, tegulæ, and thorax spotted with black; abdomen either banded or almost completely suffused with black, leaving a white patch with a black semicircular mark on the last segment. Fore wing with two waved subbasal lines from the costa to median nervure, some black spots below the median nervure; a highly waved antemedial band; a waved medial line; a black line on discocellulars surrounded by a black ring-mark; three waved postmedial lines; the last with some black spots beyond it; a marginal and cilial series of black spots. Hind wing more or less suffused with fuscous; two indistinct medial lines and a series of marginal black spots.

The palest and smallest form (♂ 46 millim.) is from Madras, in which all the black markings are slender; the hind wing pure white with small marginal black specks; *liturata* (62 millim.) has

Fig. 94.—*Cerura liturata*, ♂. 1/1.

the black ring-mark round the discocellular line of the fore wing incomplete, the hind wing slightly suffused with fuscous, except at base; *wisei* (♀ 90 millim.) has the antemedial band of the fore wing wider, the ring round the discocellular line complete, the hind wing wholly, but slightly, suffused with black; *damodara* (70 millim.), from China and Bengal, has the abdomen almost wholly black, the black ring-mark of fore wing sometimes filled in with black; *kandyia*, from Ceylon (60 millim.), is again rather darker, the hind wing being blacker.

Hab. China; Sikhim; Assam; Bombay; Madras; Ceylon. *Exp.*, ♂ 46–70, ♀ 62–90 millim.

277. **Cerura prasana**, *Moore, P. Z. S.* 1865, p. 812; *C. & S.* no. 1125.

♂. Differs from *liturata* in the head, thorax, and abdomen being white, with hardly a trace of black markings; the terminal segments of abdomen black with a white anal tuft. Fore wing with pale centres to the ante- and postmedial bands, the latter interrupted at middle; some black strigæ from costa, and minute specks near base; the dentate lines absent.

Hab. N.E. Bengal. *Exp.* 40 millim.

Genus **DAMATA**.

Damata, *Wlk. Cat.* v, p. 1044 (1855).

Type, *D. longipennis*, Wlk.

Range. Sikhim; Nága Hills; Cambodia.

Palpi porrect and hairy. Antennæ with the branches very long and ceasing abruptly one-fourth from apex. Fore wing long and narrow; vein 5 from just below the angle of cell; 6 and 10 from end of areole, which is formed by 9 anastomosing with 7 and 8. Hind wing with vein 5 from near upper angle of cell; 6 and 7 stalked; 8 running close along 7 to towards the end of cell.

278. **Damata longipennis,** *Wlk. Cat.* v, p. 1044; *Butl. Ill. Het.* vi, pl. 106, fig. 10; *C. & S.* no. 1179.

♂. Antennæ black; head and thorax dark chocolate; patagia white fringed with red; abdomen brown, with slight white lateral tufts. Wings white. Fore wing irrorated with black scales;

Fig. 95.—*Damata longipennis*, ♂. $\frac{1}{1}$.

large triangular chocolate marks on costa and inner margin before and after the middle; a series of small marginal spots; cilia copper-coloured. Hind wing with a short brown line from the inner margin above the anal angle and patch at angle; the margin narrowly brown; cilia chequered copper and white.

Hab. Sikhim. *Exp.* 70 millim.

279. **Damata microsticta,** n. sp.

♂. Differs from *longipennis* in the thorax and patagia being grey. Fore wing more thickly irrorated with fuscous, so that it appears grey; the triangular marks much smaller and black; the spot towards outer angle absent; series of small black spots on the nervules beyond the cell, in interno-median interspace, and on vein 1; no marginal spots. Hind wing with a slight fuscous patch and streak at anal angle. Cilia of both wings chequered fuscous and white.

Hab. Nága Hills, 6000 feet (*Doherty*); Cambodia. *Exp.* 56 millim. Type in coll. Elwes.

Genus **DICRANURA.**

Dicranura, *Boisd. Ind. Meth.* p. 54 (1829).

Type, *D. vinula*, Linn., from Europe.

Range. Europe; Japan; China; N.W. Himalayas.

Palpi slight and porrect; antennæ with the branches long and slender and reaching the apex. Abdomen and legs hairy. Fore wing broad; vein 5 from just below upper angle of cell; 6 from end of areole, which is formed by 9 and 10 anastomosing with 7

and 8. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of cell.

280. **Dicranura himalayana**, *Moore, P. Z. S.* 1888, p. 400; *Butl. Ill. Het.* vii, pl. 125, fig. 3; *C. & S.* no. 1124.

Head, thorax, and abdomen covered with long brownish-grey hair; thorax with traces of black spots; abdomen with smoky black bands and longitudinal streaks on the terminal segments.

Fig. 96.—*Dicranura himalayana*, ♂. 1/1.

Fore wing grey with a basal whitish patch; a black speck at base; a series of subbasal black spots; two highly dentate postmedial indistinct fuscous lines; a series of marginal spots. Hind wing paler fuscous grey, with a series of marginal spots.

One female has two prominent black streaks on the thorax; fore wing with prominent double black antemedial lines, and all the markings stronger. Closely allied to the European *erminea*, Esp.

Hab. Dharmsála. *Exp.*, ♂ 60, ♀ 80 millim.

Genus **METASCHALIS**, nov.

Type, *M. disrupta*, Moore.

Range. Sikhim.

Palpi porrect, stout and thickly scaled. Antennæ bipectinate almost to tips in male, the branches short, the basal joint tufted. Fore wing rather long and narrow: vein 5 from just above centre of discocellulars; 6, 7, 8, 9, 10 stalked. Hind wing with veins 3 and 4 stalked, 5 from the centre of the discocellulars; 6 and 7 stalked; 8 running close along 7 at middle of cell.

281. **Metaschalis disrupta**, *Moore, Lep. Atk.* p. 62; *C. & S.* no. 1155.

♂. Palpi, antennæ, thorax, and abdomen red-brown; vertex of head and coxæ of fore legs creamy white; tarsi banded with white. Fore wing dark brown; the costa and area above vein 1 suffused with red-brown; a white spot followed by an orange spot in end

of cell; a black spot on discocellulars from which a golden-yellow streak proceeds to a large creamy white patch on outer margin below the apex. Hind wing pale fuscous.

Hab. Sikhim. *Exp.* 50 millim.

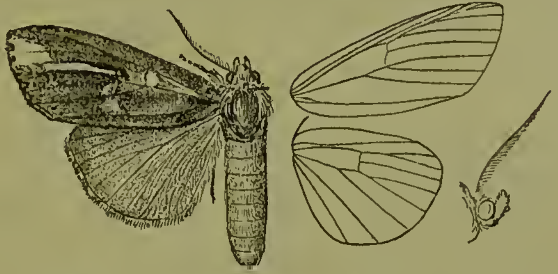

Fig. 97.—*Metaschalis disrupta*, ♂. 1/1.

Genus CHADISRA.

Chadisra, *Wlk. Trans. Ent. Soc.* ser. 3, i, 1862, p. 81.

Type. C. bipars, Wlk.

Range. Ceylon; Borneo.

Palpi upturned in male, reaching vertex of head, the first two joints fringed with hair, the third short; slight and porrect in female. Antennæ fasciculate in male, ciliate in female. Fore wing rather narrow, the apex rounded; vein 6 given off beyond the angle of cell; 9 anastomosing with 8 to form the areole, which is long. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of the cell.

282. **Chadisra bipars**, *Wlk. Trans. Ent. Soc.* ser. 3, i, 1862, p. 82; *C. & S.* no. 1138.

Pheosia basalis, *Moore, Lep. Ceyl.* ii, p. 113, pl. 121, figs. 1, 1 *a* (larva and pupa); *C. & S.* no. 1206.

♂. Head, thorax, and abdomen red-brown. Fore wing with the basal area red-brown with fine pale streaks; a black medial

Fig. 98.—*Chadisra bipars*, ♂. 1/1.

line bent inwards at vein 2; two waved postmedial lines, with brown patches between them at costa and inner margin, and with black dentate marks on them; a submarginal series of specks. Hind wing pale fuscous, the margin darker; a pale streak at anal angle; cilia whitish towards apex.

♀. Head, thorax, and base of fore wing ochreous white; the markings of the fore wing more distinct.

Larva greenish white above, green below; pale green oblique lateral lines; a grey-bordered yellow dorsal line with a red tubercle on 11th somite; head black-lined; legs green.

Hab. Ceylon. *Exp.*, ♂ 38, ♀ 44 millim.

Genus PHEOSIA.

Pheosia, *Hübn. Verz.* p. 145 (1816).
Hoplitis, *Hübn. Verz.* p. 147 (1816).
Hupodonta, *Butl. A. M. N. H.* (4) xx, p. 475 (1877).

Type, *P. dictæa*, Linn., from Europe.

Range. Europe; Japan; and throughout India.

Palpi slight and porrect. Fore wing rather long and narrow; vein 5 given off just below the angle of the cell; 6, 7, 8, 9, 10 stalked, or 10 from cell; no areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 before the end of the cell.

Sect. I. Antennæ of male with short stiff branches; the terminal one-fourth filiform.

283. **Pheosia fasciata**, *Moore, P. Z. S.* 1888, p. 401; *Butl. Ill. Het.* vii, pl. 125, figs. 9, 10; *C. & S.* no. 1207 a.

Head and thorax grey, with a few red-brown hairs; abdomen grey. Fore wing whitish ochreous, suffused in parts with pale

Fig. 99.—*Pheosia fasciata*, ♂. 1/1.

brown; some red-brown strigæ and streaks on and below the costa; a series of short streaks on the nervules towards outer margin; inner margin red-brown; cilia chequered pale and red-brown. Hind wing ochreous white; the outer margin slightly clouded with brown, especially at anal angle.

Larva pale green; head streaked with dark red, a series of dorsal quadrate red marks largest from 7th to anal somite; the 4th to anal somites in some specimens wholly striated with red-brown; a long dorsal process on 4th somite.

Hab. Dharmsála, Sikhim. *Exp.*, ♂ 42, ♀ 50 millim.

284. **Pheosia pulcherrima**, *Moore, P. Z. S.* 1865, p. 814, pl. 43, fig. 4; *C. & S.* no. 1160.
Hupodonta corticalis, *Butl. A. M. N. H.* (4) xx, 1877, p. 475.

Head and collar red-brown; thorax and abdomen reddish ochreous. Fore wing pale brown, suffused in parts with red-brown and fuscous, the inner area ochreous except at outer angle; a large medial patch of fuscous suffusion from costa to vein 2; three indistinct dentate postmedial curved lines; a red-brown line, followed by an ochreous line, and a dark grey band with a black line on it on outer margin. Hind wing fuscous; an ochreous patch with dark and red-brown lines on it at anal angle. Underside fuscous; hind wing with a postmedial curved line.

Hab. Japan; Sikhim. *Exp.*, ♂ 56, ♀ 64 millim.

285. **Pheosia excurvata**, n. sp.

♂. Head and thorax grizzled brown and grey; abdomen pale fuscous. Fore wing pale brown, with a slight vinous tinge and fuscous suffusion; a black streak along median nervure from the base; an indistinct waved antemedial line; black streaks in the end of cell and on the nervules beyond it; two postmedial lines very highly excurved below the costa, the inner line indistinct. Hind wing pale fuscous; cilia of both wings chequered pale and dark.

Hab. Sikhim. *Exp.* 50 millim. Type in coll. Knyvett.

286. **Pheosia grisea**, *Swinh. Cat. Het. Mus. Oxon.* ined.

♂. Head, thorax, and abdomen brownish grey. Fore wing with an indistinct dark subbasal line; a spot on the costa before the middle; medial and postmedial lines, the latter bent inwards at vein 3; two curved oblique submarginal lines, far apart at costa, approaching each other towards inner margin. Hind wing white, with a brownish-grey patch at anal angle.

Hab. "N. India." *Exp.* 48 millim.

287. **Pheosia strigata**, *Moore, Lep. Atk.* p. 68, pl. iii, fig. 13; *C. & S.* no. 1204.

Head and thorax grey; frons and a streak on vertex of thorax blackish; antennæ fulvous. Fore wing longitudinally marked pale and dark chestnut-brown; a basal grey patch; short costal grey streaks before the apex, with a dark curved fascia from them to the apex; a waved marginal brown line. Hind wing white; the costa brownish; a large black spot speckled with grey on outer margin near anal angle.

Hab. N.E. Bengal; Canara. *Exp.*, ♂ 66, ♀ 76 millim.

SECT. II. Antennæ of male ciliated.

88. **Pheosia sikkima**, *Moore, Lep. Atk.* p. 69; *C. & S.* no. 1208.

♂. Head black; collar grey; thorax and abdomen red-brown. Fore wing very dark red-brown; a large pale red-brown patch from middle of costa to apex; inner margin pale red-brown; indistinct dark lines across end of cell and on discocellulars. Hind wing uniform fuscous.

Hab. Sikhim. *Exp.* 56 millim.

Genus NOTODONTA.

Notodonta, *Ochs. Eur. Schmett.* iii, p. 45 (1810).
Peridea, *Steph. Ill. Brit. Ent., Haust.* ii, p. 32 (1829).

Type, *N. dromedarius*, Linn., from Europe.

Range. Europe; Himalayas; Nága Hills.

Differs from *Pheosia* in the branches of the antennæ of the male being longer, and in the fore wing having a prominent tuft of scales on inner margin.

289. **Notodonta albifascia**, *Moore, Lep. Atk.* p. 69; *C. & S.* no. 1205.

♂. Head and thorax red-brown; patagia and metathorax fringed with dark scales; abdomen pale red-brown. Fore wing with a broad whitish fascia from base to near apex, leaving the

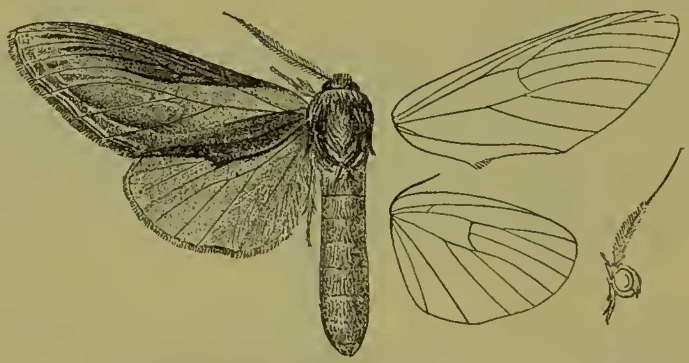

Fig. 100.—*Notodonta albifascia*, ♂. $\frac{1}{1}$.

costal, inner, and outer areas pale red-brown; veins 5 and 6 streaked with black at their origins; an indistinct pale submarginal line; the tuft of scales dark. Hind wing pale with a reddish tinge.

Hab. Sikhim. *Exp.* 70 millim.

290. **Notodonta gigantea**, *Elwes, P. Z. S.* 1890, p. 399.

♀. Head, thorax, and abdomen pale brown; basal segments of abdomen fuscous above; all the segments with paired lateral ochreous tufts. Fore wing red-brown; the medial costal area

suffused with grey; some dark red-brown irregular marks on basal area; reniform pale, with a red-brown streak on the discocellulars; a highly dentate double postmedial line; a series of indistinct lunulate submarginal marks; a marginal dark line; the tuft of scales dark with a black line above it. Hind wing yellow; the veins black.

Hab. Kulu; Sikhim. *Exp.* 126 millim.

291. **Notodonta moorei.**

Notodonta sikhima, *Moore, Lep. Atk.* p. 68 (nom. præocc.); *C. & S.* no. 1192.

Head and collar grey, the latter fringed with brown; patagia black; thorax and abdomen pale brown. Fore wing grey; basal area dark brown, with a double subbasal waved line, and bounded by a double waved line; a white blotch on the discocellulars and speck at origin of vein 2; three dark postmedial blotches on costa, between veins 4 and 5, and on inner margin, with traces of a waved line before them; a marginal series of dark spots; the tuft of scales dark brown. Hind wing grey; a fuscous postmedial slightly irregular band, with a waved line before it.

Hab. Sikhim. *Exp.*, ♂ 70, ♀ 92 millim.

92. **Notodonta sikkima,** *Moore, P. Z. S.* 1865, p. 812; *C. & S.* no. 1174.

Heterocampa irrorata, *Moore, Lep. Atk.* p. 60; *C. & S.* no. 1170.

Head, thorax, and fore wing uniformly clothed with light and dark brown, greenish-yellow, and white scales. Fore wing with the veins slightly streaked with black. Abdomen and hind wing pale red-brown; the former darker at extremity.

The form *irrorata* is paler.

Hab. Sikhim. *Exp.*, ♂ 60, ♀ 48–56 millim.

293. **Notodonta rufa,** n. sp.

♀. Head and thorax dark red-brown, the collar grizzled; abdomen fuscous. Fore wing dark brown; indistinct ante- and postmedial waved dark lines; the latter edged with grey at costa; two dark specks on discocellulars; irregularly placed dark streaks in the marginal interspaces, slight pale streaks from base below median nervure and on inner margin. Hind wing fuscous, with traces of a medial line.

Hab. Nága Hills (*Doherty*). *Exp.* 54 millim. Type in coll. Elwes.

Genus HYPERÆSCHRA.

Hyperæschra, *Butl. A. M. N. H.* (5) vi, p. 65 (1880).

Type, *H. pallida*, Butl.

Range. Kangra; Sikhim; Ceylon; Singapore.

Palpi upturned, fringed with hairs in front; antennæ with

short stiff branches reaching the apex in male. Fore wing rather long, the outer margin evenly curved, a tuft of scales on inner margin; vein 6 from angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of cell.

SECT. I. Female with antennæ pectinate.

294. **Hyperæschra pallida**, *Butl. A. M. N. H.* (5) vi, 1880, p. 65; *Ill. Het.* vi, pl. 104, fig. 6; *C. & S.* no. 1530.

♀. Head and thorax brown and grey. Fore wing grey suffused with brown, especially along inner margin, beyond the lower angle of cell, and at apex; a black streak from the base below median nervure; a short streak in the cell above the origin of vein 2, one beyond the cell between veins 3 and 4, and two subapical streaks; a waved postmedial dark line. Hind wing pale brown.

Hab. Sikhim; Singapore. *Exp.* 54 millim.

SECT. II. Female with antennæ ciliate.

295. **Hyperæschra basistriga**, *Moore, P. Z. S.* 1888, p. 400; *Butl. Ill. Het.* vii, pl. 125, figs. 5 & 6; *C. & S.* no. 1168 A.

♂. Differs from *pallida* in being darker; the dark streak from the base of the fore wing shorter and broader; the paired ante- and postmedial waved lines more distinct, as also is the submarginal series of lunules; no black streak in the cell above vein 2; a black streak on the discocellulars. Hind wing white.

♀. Hind wing pale fuscous.

Hab. Kangra; Dharmsála. *Exp.*, ♂ 52, ♀ 56 millim.

296. **Hyperæschra tenebrosa**, *Moore, P. Z. S.* 1865, p. 815; *C. & S.* no. 1524.

♂. Dark brown: fore wing with a pale fascia on inner area, extending and narrowing along the outer margin to the apex; a large pale patch on the apical portion of the costa; indistinct dentate postmedial and submarginal lines. Hind wing duller brown.

Hab. Sikhim. *Exp.* 58 millim.

297. **Hyperæschra basalis**, *Moore, P. Z. S.* 1865, p. 813; *C. & S.* no. 1190.

Head, thorax, and the basal two thirds of fore wing dark purplish red-brown, the vertex of thorax and base of fore wing paler, the latter with pale streaks; outer area of fore wing greenish grey;

dark postmedial spot on the costa; a series of postmedial dark

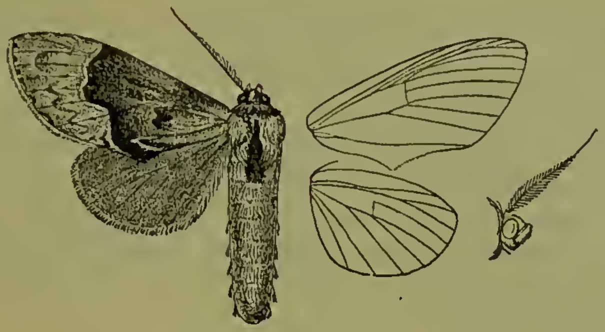

Fig. 101.—*Hyperæschra basalis*, ♂. 1/1.

specks; a broken waved submarginal line; a series of marginal specks. Abdomen and hind wing fuscous.

Hab. Sikhim. *Exp.* 50 millim.

298. **Hyperæschra nigribasis**, n. sp.

♂. Head and thorax smoky black; abdomen fuscous. Fore wing with the base black as far as the antemedial curved double line, the area beyond which is fuscous; a black spot at end of cell; reniform pale and elongate; an indistinct double postmedial waved line; a dentate submarginal indistinct line from below the apex, the area beyond it with an olive tinge; the costa towards apex, interspace between veins 4 and 5, and area near outer angle also with an olive tinge. Hind wing fuscous, with traces of a pale medial line.

Hab. Sikhim. *Exp.* 54 millim. Type in coll. Knyvett.

299. **Hyperæschra dentata**, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 11.

♀. Head and thorax brownish grey with brown markings. Fore wing brownish grey suffused with brown; some dark streaks along the veins at base; a waved antemedial line, highly dentate towards inner margin; a dark streak on the discocellulars; dentate postmedial and submarginal lines; a waved marginal line; abdomen and hind wing grey-brown.

Hab. Trincomali, Ceylon. *Exp.* 56 millim.

*300. ? **Hyperæschra variegata**, *Moore, Lep. Atk.* p. 61; *C. & S.* no. 1175.

♂. Head and collar olive-green; thorax and abdomen grey-brown. Fore wing purplish brown, suffused with yellow near base; a pale patch at end of cell; a yellow patch on costa before apex; a marginal yellow band. Hind wing brown, the area in the cell paler; a submarginal dark line and yellow patch at anal angle.

Hab. Sikhim. *Exp.* 58 millim.

Genus LOPHOPTERYX.

Lophopteryx, *Steph. Ill. Brit. Ent., Haust.* ii, p. 26 (1829).

Type, *L. camelaria*, Linn., from Europe.
Range. Europe; Japan; China; Sikhim.

Palpi porrect. Antennæ serrate and fasciculate. Fore wing broad, the apex acute, outer margin crenulate, a pronounced tuft of scales on inner margin; vein 6 from just above the angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of cell.

Sect. I. Fore wing with inner margin nearly straight beyond the lobe.

301. **Lophopteryx saturata,** *Wlk. Cat.* xxxii, p. 415; *Butl. Ill. Het.* vi, pl. 107, fig. 1.

♂. Head, thorax, and abdomen dark red-brown; an indistinct waved subbasal line; paired dentate oblique ante- and postmedial lines; the reniform spot pale; cilia rufous at outer angle. Hind wing fuscous; a patch at anal angle composed of short rufous,

Fig. 102.—*Lophopteryx saturata*, ♂. 1/1.

pale and dark brown bands suffused with grey; underside with some pale strigæ on the costa before apex.

Hab. Sikhim. *Exp.*, ♂ 42, ♀ 60 millim.

302. **Lophopteryx atrofusa,** n. sp.

♂. Differs from *saturata* in being much darker; the thorax and fore wing suffused with black-brown and irrorated with bluish-grey scales, the latter without markings, except for traces of a postmedial line appearing as two pale dentitions below the costa. Hind wing with one whitish line above the anal grey patch.

Hab. Sikhim (*Möller*). *Exp.* 37–44 millim. Type in coll. Elwes.

303. **Lophopteryx flavistigma,** *Moore, Lep. Atk.* p. 67; *C. & S.* no. 1163.

♂. Differs from *saturata* in the fore wing being without the subbasal waved lines; the ante- and postmedial lines single, dentate and curved, instead of waved and oblique. Hind wing with the patch and streak at anal angle sometimes minute. Underside with pale marks on the costa towards apices of fore and hind wings.

Hab. Sikhim. *Exp.* 44 millim.

SECT. II. Fore wing with the inner margin slightly excised beyond the lobe.

304. **Lophopteryx ferruginosa,** *Moore, Lep. Atk.* p. 67; *Waterh. Aid,* ii, pl. 132, fig. 5; *C. & S.* no. 1162.

♂. Differs from *flavistigma* in the markings of the fore wing being obscured by fuscous suffusion; the antemedial dentate line oblique; the reniform hardly visible; the postmedial line more recurved. Hind wing fuscous, without anal patch or streak. Underside of hind wing with a spot on the discocellulars and curved postmedial line.

Hab. Murree; Sikhim; Nága Hills. *Exp.* 38–46 millim.

Genus **MEGACERAMIS**, nov.

Type, *M. lamprolepis*, Hmpsn.
Range. Sikhim.

Palpi small and porrect. Antennæ fasciculate in the male. Head, thorax, and patagia very thickly scaled. Fore wing with vein 6 from angle of cell; 9 and 10 anastomosing with 8 to form the areole, which is short. Hind wing with veins 3 and 4 stalked, 5 from the middle of the discocellulars; 6 and 7 stalked; 8 running close along 7 at middle of cell.

Fig. 103.—*Megaceramis lamprolepis,* ♂. $\frac{1}{1}$.

305. **Megaceramis lamprolepis,** n. sp.

♂. Head, thorax, and abdomen red-brown; patagia very dark red-brown, fringed with glittering scales. Fore wing bright red-

brown, suffused in parts with purplish and irrorated with a few white scales; some ochreous streaks towards the apex; a medial series of dark specks joined by a curved postmedial series on inner margin; a dark streak on discocellulars; the tuft composed of glittering dark scales. Hind wing fuscous. Underside of both wings with a waved postmedial line.

Hab. Sikhim (*Elwes*). *Exp.* 36 millim. Type in coll. Elwes.

Genus **APELA**.

Apela, *Walk. Cat.* v, p. 1092 (1855).

Type, *A. divisa*, Wlk.

Range. Nepal.

Palpi upturned and slender; antennæ ciliate in female. Fore wing very broad, the costa arched, the apex acute; the inner margin with a dentate lobe, and a tuft of scales on it beyond which the margin is excised; a tuft of scales at outer angle; vein 5 from near angle of cell; 7 and 10 from end of the long areole, which is formed by 9 anastomosing with 8. Hind wing with veins 6 and 7 stalked; a bar between veins 7 and 8.

306. **Apela divisa**, *Walk. Cat.* v, p. 1093; *C. & S.* no. 1181.

♀. Ochreous brown. Fore wing with two very indistinct ante-

Fig. 104.—*Apela divisa*, ♀. 1/1.

medial curved lines; an oblique line from the apex to the lobe on inner margin; the tuft of scales dark. Hind wing fuscous brown.

Hab. Nepal. *Exp.* 46 millim.

Genus **SPATALIA**.

Spatalia, *Hübn. Verz.* p. 145 (1816).
Rosama, *Wlk. Cat.* v, p. 1066 (1855).
Caschara, *Wlk. Journ. Linn. Soc.* vi, p. 133 (1862).
Allata, *Wlk. Journ. Linn. Soc.* vi, p. 140 (1862).
Celeia, *Wlk. Cat.* xxxii, p. 463 (1864).

Type, *S. argentina*, Schiff., from Europe.

Range. Europe; Japan; China; Himalayas; Canara; Nilgiris; Borneo; Java.

Palpi porrect and hairy; abdomen with lateral tufts of hair and two large terminal tufts. Fore wing with the inner margin more or less lobed and excised; a large tuft of scales on the lobe, and a tuft at outer angle; vein 6 from the angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 on a short stalk; 8 running close along 7 to towards the end of cell.

Sect. I (*Spatalia*). Antennæ of male with the branches short and stiff.

307. **Spatalia argentifera,** *Wlk. Journ. Linn. Soc.* vi, p. 140.
Celeia plusiata, *Wlk. Cat.* xxxii, p. 463; *C. & S.* no. 1156.
Celeia sikkima, *Moore, Lep. Atk.* p. 63; *C. & S.* no. 1157.

♂. Head, thorax, and abdomen pale and dark brown. Fore wing pale brown, with some dark and red-brown suffusion below

Fig. 105.—*Spatalia argentifera*, ♂. 1/1.

the median nervure near the base; a silver streak along the median nervure from below the middle of the cell to lower angle, with a spot beyond it, and sending spurs outwards along veins 2 and 3, which may be separated into spots; some dark brown suffusion at apex and middle of outer margin; an ill-defined dark or red-brown submarginal line. Hind wing fuscous.

Some specimens have the head, thorax, and fore wing very much darker.

In the form *argentifera=plusiata* from Canara and Borneo the silver streak is broad; *sikkima* is darker, with the streak narrow.

Hab. Sikhim; Canara; Bangalore; Borneo. *Exp.* 50–54 millim.

308. **Spatalia gemmifera,** *Moore, Lep. Atk.* p. 62, pl. iii, fig. 14; *C. & S.* no. 1203.

♂. Head and thorax chestnut-brown; abdomen pale sienna-brown; a small silvery white spot below the base of the cell and a large triangular spot at origin of vein 2; a dark brown streak from the lower angle of cell to outer margin below apex; some black dots near apex; a submarginal series of pale spots; the tuft on inner margin black. Hind wing pale sienna-brown.

Hab. Sikhim. *Exp.* 50 millim.

309. **Spatalia costalis**, *Moore, Lep. Atk.* p. 69; *C. & S.* no. 1207.

Dull brown; thorax with a buff-white tuft on vertex. Fore wing with the costal area white, slightly suffused and the veins streaked with pale red-brown; a trifid white mark on disco-cellulars; median nervure and origin of veins 2 and 3 streaked with white; very indistinct double postmedial and submarginal waved dark lines. Hind wing pale fuscous.
Hab. Sikhim. *Exp.* ♀ 54 millim.

310. **Spatalia argentata**, *Moore, Lep. Atk.* p. 67; *Waterh. Aid*, ii, pl. 132, fig. 4; *C. & S.* no. 1161.

♂. Head and thorax dark red-brown, the patagia grey; abdomen paler red-brown. Fore wing silvery grey, slightly suffused with red-brown, especially towards outer angle; some dark strigæ on the costa and a blotch before the apex; indistinct double subbasal, medial and postmedial waved dark lines; reniform outlined in black; a submarginal series of dark specks. Hind wing pale fuscous grey.
Hab. Sikhim. *Exp.* 40 millim.

311. **Spatalia albifasciata**, n. sp.

♂. Head and thorax brown; collar white. Fore wing with a broad white fascia on the costal area occupying nearly half the wing; the inner half brown, with a large oval ferruginous subbasal patch; an indistinct pale postmedial line; a reddish patch beyond lower angle of cell; an indistinct waved dark submarginal line. Abdomen and hind wing pale fuscous.
Hab. Nilgiris (*Lindsay*). *Exp.* 50 millim. Type in coll. Moore.

SECT. II. (*Rosama*). Male with branches of antennæ long.

312. **Spatalia auritractata**, *Moore, P. Z. S.* 1865, p. 811; *C. & S.* no. 1154.

♂ differs from *argentifera* in having the metallic streak along the median nervure of fore wing narrow and golden, the lobe on inner margin shorter.
Hab. Sikhim. *Exp.* 52 millim.

313. **Spatalia plusioides**, *Moore, Lep. Atk.* p. 62; *C. & S.* no. 1202.

♂. Head and thorax ochreous, the collar purplish; wings shorter and more rounded than in the preceding species. Fore wing yellow, with waved rufous striæ; the costal and outer areas purplish, leaving ochreous spots beyond the middle of the costa and on centre of outer margin; a silvery triangular spot below the end of the cell; a waved submarginal dark line. Abdomen and hind wing fuscous.
♀. The patagia also purplish brown; fore wing with the silver

spot absent; the costal area paler; the purplish suffusion confined to the apex; a prominent series of marginal white points; abdomen and hind wing dark fuscous.

A specimen from Sikhim has the basal part of costa of fore wing and outer area suffused with silvery grey; another from the Nága Hills has the ground-colour chocolate.

Hab. Kangra; Sikhim; Nágas. *Exp.* 36–40 millim.

Genus **BESAIA**.

Besaia, *Wlk. Cat.* xxxii, p. 458 (1864).

Type, *B. rubiginea*, Wlk.

Range. Sikhim; Khási Hills.

Palpi upturned, the first two joints heavily fringed with hair. Antennæ of male fasciculate. Fore wing with fringes of hair at lobe on inner margin and outer angle; vein 6 from angle of cell; 9 and 10 anastomosing with 8 to form the areole. Hind wing with veins 6 and 7 stalked, 8 running close along 7 to beyond middle of cell. Abdomen long, slender, and with an anal tuft.

314. **Besaia rubiginea**, *Wlk. Cat.* xxxii, p. 459; *Butl. Ill. Het.* vi, pl. 104, fig. 10; *C. & S.* no. 1142.

♂. Olive-grey. Fore wing with a rust-red subbasal line; a double antemedial highly-waved line, with a streak running outwards

Fig. 106.—*Besaia rubiginea*, ♂. ½.

from it along vein 2 and one towards base along inner margin; a double postmedial line, its outer portion diffused, with a series of pale specks on it, and sending projections outwards towards the apex and between veins 3 and 4; a series of marginal dark specks. Hind wing fuscous.

Hab. Sikhim. *Exp.* 58 millim.

Genus **CLEAPA**.

Cleapa, *Wlk. Cat.* v, p. 1036 (1855).

Type, *C. latifascia*, Wlk.

Range. Burma.

Palpi porrect and slightly scaled. Antennæ with the branches rather short and reaching the apex. Fore wing short and broad;

Fig. 107.—*Cleapa latifascia*, ♀. $\frac{1}{1}$.

vein 6 from angle of cell, 9 and 10 anastomosing with 8 to form a long areole. Hind wing with veins 6 and 7 stalked; 8 running close along 7 to towards the end of the cell.

315. **Cleapa latifascia**, *Wlk. Cat.* v, p. 1037; *C. & S.* no. 1176.

♀. Head and thorax dark brown. Fore wing dark brown, with some pale red-brown on inner basal and outer areas; two dark streaks in the cell; a double antemedial indistinct waved line; a similar but curved postmedial line, with a black spot beyond it on inner margin; traces of a pale waved submarginal line. Abdomen and hind wing fuscous.

Hab. Moulmein; Rangoon. *Exp.* 42 millim.

Genus **ICHTHYURA.**

Ichthyura, *Hübn. Verz.* p. 162 (1816).
Gaugamela, *Wlk. Journ. Linn. Soc.* vi, p. 138 (1862).
Uxela, *Wlk. Cat.* xxxv, p. 1982 (1866).

Type, *I. anastomosis*, Linn., from Europe.

Range. N. America; Europe; Japan; China; throughout India and Ceylon, Borneo, Java.

Palpi porrect and slender. Antennæ with the branches long and reaching the apex. Fore wing rather narrow; vein 5 from near upper angle of cell; 6, 7, 8, 9, 10 stalked; no areole. Hind wing with vein 5 absent; 6 and 7 on a short stalk; 8 running close along 7 to towards the end of cell. Fore leg with the tarsal joints very short, broad, and thickly fringed with hair.

316. **Ichthyura anachoreta**, *Fabr. Mant. Ins.* ii, p. 120.
Ichthyura fulgurita, *Wlk. Cat.* xxxii, p. 433; *C. & S.* no. 1195.
Ichthyura javana, *Moore, Lep. E.I.C.* p. 352, pl. xvi, figs. 7, 7*a* (larva).
Nerice pallida, *Wlk. Cat.* v, p. 1077; *C. & S.* no. 1180.

Head, thorax, and abdomen grey-brown; palpi fringed with dark brown; frons dark brown, a dark streak from the vertex of head to vertex of thorax. Fore wing grey-brown; two pale

oblique antemedial lines, the outer bent outwards near inner margin; a slightly curved postmedial line; the whole apical area beyond the cell dark grey-brown down to vein 3, with an irregular

Fig. 108.—*Ichthyura anachoreta*, ♂. $\frac{1}{1}$.

series of postmedial white spots on it from the costa to vein 3, and some red suffusion beyond them; an indistinct series of submarginal black spots, the one between veins 2 and 3 prominent and placed further from the margin. Hind wing pale fuscous.

The Indian form *fulgurita* (♂ 34, ♀ 45 millim.) generally has some black suffusion beyond the outer antemedial line near the inner margin, this being wanting in the European, Japanese, and Chinese typical form; the form *javana* (♂ 26, ♀ 32 millim.; types bred) is smaller and paler; *pallida* (♀ 54 millim.) is a large pale form from Nepal.

Larva pale brown, covered sparsely with short pale hair; a dorsal hump on 4th somite, with paired white spots on each side of it; an indistinct dark dorsal line; lateral area streaked with dark brown.

Hab. Europe; Japan; China; throughout India and Ceylon; Java. *Exp.* 26–54 millim.

317. **Ichthyura costicomma**, n. sp.

Differs from *anachoreta* in wanting the dark streak on head and thorax. Fore wing with an oblique line in addition to the two antemedial lines from the costa before the middle to inner margin at the postmedial line, beyond which the area is bright red-brown suffused with dark brown, except near inner margin beyond the postmedial line; three regularly-disposed postmedial white spots below the costa; a well-defined submarginal waved dark line.

Hab. Canara; Nilgiris. *Exp.*, ♂ 28, ♀ 32 millim. Type ♂ in Mus. Oxon., ♀ in B.M.

318. **Ichthyura cupreata**, *Butl. P. Z. S.* 1886, p. 387.

♀. Head, thorax, and fore wing pale reddish brown. Fore wing with two pale oblique antemedial lines, the first angled at median nervure, the second curved to near inner margin; a medial outwardly-curved line joining a straight postmedial line at inner margin; reniform filled in with fuscous; an indistinct lunulate submarginal line. Abdomen and hind wing paler.

Hab. Campbellpur, Punjab. *Exp.* 30 millim.

319. **Ichthyura restitura**, *Wlk. Cat.* xxxii, p. 433; *Moore, Lep. Ceyl.* ii, pl. 122, figs. 1, 1 *a*, *b* (larva and pupa); *C. & S.* no. 1197.
Ichthyura indica, *Moore, P. Z. S.* 1865, p. 813; *C. & S.* no. 1196.

♂. Differs from *cupreata* in being dark red-brown; the vertex of head and thorax dark velvety brown. Abdomen and hind wing dark brown.

Larva purplish brown or grey, with pinkish dorsal tubercles on 4th and 11th somites; a sublateral series of small tubercles; slight lateral dark lines; the thoracic somites each with a white black-centred spot; two lateral series of whitish dots and some dorsal ones.

Hab. Bengal; S. India; Ceylon. *Exp.* 26–34 millim.

320. **Ichthyura undulata**, *Hmpsn. Ill. Het.* viii, p. 60, pl. 141, fig. 3.

♀. Pale olive-brown. Fore wing with some dark suffusion above centre of inner margin and below apex; the two antemedial lines dentate, the outer line oblique and angled near inner margin; the postmedial waved and curved; the dark waved submarginal line well defined. Abdomen and hind wing rather paler, the latter with an indistinct curved postmedial line with a pale spot on it at inner margin.

The race from the N.W. Himalayas differs from the typical Nilgiri form in the male having the thorax and fore wing ferruginous, the latter with the two inner and outer lunulate lines grey with dark edges and a black speck at the end of the cell; hind wing with the postmedial line and white spot more distinct. The female is darker; fore wing with the space between the inner lines and also the outer area suffused with dark grey.

Hab. N.W. Himalayas; Nilgiris, N. slopes, 3500 ft. *Exp.* 30 millim.

*321. **Ichthyura ferruginea**, *Moore, P. Z. S.* 1865, p. 813; *C. & S.* no. 1194.

♀. Pale red-brown. Head and vertex of thorax dark brown. Fore wing with slightly curved subbasal and straight ante- and postmedial lines, with a short oblique line between them above inner margin; two dark marks at end of cell; two indistinct series of submarginal spots.

Hab. N.E. Bengal. *Exp.* 40 millim.

Genus CYPHANTA.

Cyphanta, *Wlk. Cat.* xxxiii, p. 855 (1865).

Type, *C. xanthoclora*, Wlk.

Range. Sikhim.

Palpi upturned reaching above vertex of head, the first two joints fringed with hair, the third naked. Antennæ simple. Legs hairy;

mid tibiæ with one pair of spurs, hind tibiæ with two pairs. Fore wing with a tuft of scales at centre of inner margin; the apex produced and acute; veins 4 and 5 from angle of cell, 6 from upper angle; 7, 8, 9, 10 stalked. Hind wing with veins 3 and 4 from angle of cell; 5 from centre of discocellulars; 6 and 7 stalked; 8 running close along 7 to middle of cell.

322. **Cyphanta xanthochlora**, *Wlk. Cat.* xxxiii, p. 856; *Butl. Ill. Het.* vi, pl. 107, fig. 3; *C. & S.* no. 1229.

Head pale brown; palpi orange; collar bright green; thorax chocolate-brown. Abdomen orange. Fore wing bright green; an

Fig. 109.—*Cyphanta xanthochlora*, ♂. 1/1.

oblique band composed of a purplish ground with three red-brown lines on it from the costa near apex to inner margin at middle, then bent inwards to the base above inner margin; a brown speck on median nervure, one at end of cell, and a submarginal series. Hind wing orange, some specimens with submarginal fuscous streaks on the veins. Underside orange; both wings with fuscous cell-spots and postmedial lines.

Hab. Sikhim. *Exp.*, ♂ 70, ♀ 76 millim.

323. **Cyphanta chortochlora**, n. sp.

♂. Head and palpi dark brown above, pale below; prothorax grass-green, meso- and metathorax dark brown; abdomen ochreous suffused with fuscous. Fore wing grass-green; a brown mark enclosing a green spot on inner basal area; a black speck at end of cell; some small obliquely placed postmedial pale spots edged with brown. Hind wing ochreous, the outer area suffused with fuscous. Underside ochreous, each wing with a cell-spot and dark postmedial line, which is obsolescent on fore wing, curved on hind wing.

Hab. "Himalayas." *Exp.* 56 millim. Type in coll. Moore.

Species formerly recorded as Indian which are omitted.

Arunda opponens, Wlk., C. & S. no. 1116. Type lost, description unrecognizable.
Sybrida inordinata, Wlk., C. & S. no. 1114, is a Pyrale.
Paravetta discinota, Moore, C. & S. no. 1158, is a Pyrale.
Paravetta sikkima, Moore, C. & S. no. 1159, is a Pyrale.
Cetola dentata, Wlk., C. & S. no. 1166 = *Ramesa ligniferata*, Wlk., C. & S. no. 1526, is a Noctua.
Triœna denticulata, Moore, Butl. Ill. Het. vii, p. 45, is a Noctua.
Hyboma divisa, Moore, Butl. Ill. Het. vii, p. 45, is a Noctua.
Hyboma umbrifera, Butl. Ill. Het. vii, p. 46, is a Noctua.
Euscotia inextricata, Moore, Butl. Ill. Het. vii, p. 47, is a Noctua.
Ichthyura submarginalis, Hmpsn. Ill. Het. viii, p. 60, is a Noctua.
Ingura cornucopia, Hmpsn. Ill. Het. viii, p. 61, is a Noctua.
Ingura cristatrix, Guen., C. & S. no. 1198, is a Noctua.
Ingura subapicalis, Wlk., C. & S. no. 1199, is a Noctua.
Ichthyura argentea, Butl., C. & S. no. 1193, is a Tinea.
Thyacidas postica, Wlk., C. & S. no. 1060 = *Drymonia denotata*, Wlk., C. & S. no. 1165, is a Noctua.
Calpe bicolor, Moore, C. & S. no. 1218, is a Noctua.
Calpe fasciata, Moore, C. & S. no. 1219, is a Noctua.
Calpe minuticornis, Guen., C. & S. no. 1220, is a Noctua.
Calpe ophideroides, Guen., C. & S. no. 1221, is a Noctua.
Dabarita icterica, Swinh., C. & S. no. 1117 = *Calpe bifasciata*, Hmpsn. Ill. Het. viii, p. 61, is a Noctua.
Calpe orthograpta, Butl., C. & S. no. 1222, is a Noctua.
Gadera incitans, Wlk., C. & S. no. 1223, is a Noctua.
Orœsia argyrosigna, Moore, C. & S. no. 1224, is a Noctua.
Orœsia emarginata, Fabr., C. & S. no. 1225, is a Noctua.
Orœsia provocans, Wlk., C. & S. no. 1226, is a Noctua.
Orœsia rectistria, Guen., C. & S. no. 1227, is a Noctua.
Orœsia vagabunda, Swinh., C. & S. no. 1228, is a Noctua.
Arsacia frontirufa, Swinh., C. & S. no. 1230, is a Noctua.
Arsacia saturalis, Wlk., C. & S. no. 1231, is a Noctua.
Callœnia elongata, Butl., C. & S. no. 1528, is a Noctua.
Callœnia pullata, Moore, C. & S. no. 1529, is a Noctua.
Notodonta ejecta, Wlk., C. & S. no. 1191. Type lost, description unrecognizable.
Elydna transversa, Wlk., C. & S. no. 1122, is a Noctua.
Hyperœschra annulata, Swinh. Trans. Ent. Soc. 1890, p. 189, is a Noctua.
Sphetta moorei, Swinh., C. & S. no. 1141, is a Noctua.
Sphetta biocellata, Moore, C. & S. no. 1140, is a Noctua.
Sphetta apicalis, Wlk., C. & S. no. 1139, is a Noctua.
Danaka pyraliformis, Moore, C. & S. no. 1210, is a Pyrale.
Culasta indecisa, Moore, C. & S. no. 1232, is a Noctua.
Oxicesta marmorea, Moore, C. & S. no. 1214, is a Noctua.
Gluphisia sinuata, Moore, C. & S. no. 1178, is a Noctua.

Ptilophora kashghara, Moore, C. & S. no. 1200, is from Turkestan.
Moma champa, Moore, C. & S. no. 1213, is a Noctua.

Family CYMATOPHORIDÆ.

A family of moths resembling the *Noctuidæ* in appearance. Proboscis present. Antennæ usually rather thickened and flattened. Mid tibia with one pair of spurs, hind tibia with two pairs. Fore wing with vein 1 *a* short and slight, not forming a fork with 1 *b*; 1 *c* absent; 5 from the centre of the discocellulars; veins 7 and 8 stalked, and 9 and 10 stalked and almost or quite anastomosing with 7 and 8 to form an areole. Hind wing with two internal

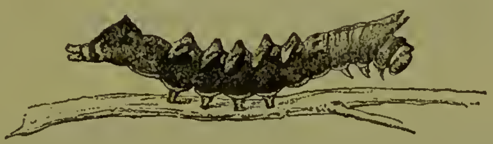

Fig. 110.—Larva of *Thyatira batis*. $\frac{1}{1}$. (From Buckler, Larvæ Brit. Butt. Moths, pl. liv, fig. 2.)

veins; vein 5 from the centre of discocellulars, or generally from below the centre; veins 6 and 7 given off not far from the base; 8 bent down and quite or almost touching 7 after the bifurcation.

Larva: Noctuæform, with five pairs of prolegs *.

Key to the Genera.

a. Fore wing with a tuft of scales at outer angle. — 1. HABROSYNE, p. 178.
b. Fore wing with no tuft of scales at outer angle.
  a'. Fore wing with vein 6 from angle of cell.
    *a*². Fore wing short and broad .... 2. THYATIRA, p. 180.
    *b*². Fore wing long, narrow, and arched .. 6. TOXOIDES, p. 185.
  b'. Fore wing with vein 6 from above angle of cell.
    *a*². Fore wing with apex rounded; hind wing with outer margin rounded .... 3. GAURENA, p. 181.
    *b*². Fore wing with apex acute; hind wing with outer margin slightly angled.
      *a*³. Antennæ thickened and flattened in both sexes .... 4. POLYPLOCA, p. 182.
      *b*³. Antennæ filiform and ciliated in both sexes .... 5. NEMACEROTA, [p. 185.

* After the *Cymatophoridæ* would follow the *Noctuidæ*, if the Heterocera could be arranged in a linear series.

Genus HABROSYNE.

Habrosyne, *Hübn. Verz.* p. 236 (1816).

Type, *H. derasa*, Linn.

Range. N. America; Europe; Japan; Himalayas.

Palpi porrect, the first two joints heavily scaled, the third short and naked. Antennæ with the joints rather broad and flattened; collar and patagia thickly fringed with hair; terminal segments of abdomen with thick lateral tufts of hair. Fore wing with a tuft of scales at outer angle; vein 6 from angle of cell; 7 and 8 stalked; 9 and 10 stalked, and almost anastomosing with 7 and 8 to form a short areole. Hind wing with vein 5 from near lower angle of cell.

324. **Habrosyne derasa,** *Linn. Syst. Nat.* i, p. 851; *Buckler, Larvæ Brit. Butt. Moths*, pl. 54, fig. 1 (larva).
Habrosyne fraterna, *Moore, P. Z. S.* 1888, p. 406; *Butl. Ill. Het.* vii, pl. 125, fig. 11; *C. & S.* no. 1629 A.
Gonophora indica, *Moore, P. Z. S.* 1867, p. 44; *Waterh. Aid*, i, pl. 9.

Head and thorax golden brown, the collar with fine dark lines; abdomen pale fuscous. Fore wing silvery grey; a large golden-brown triangular patch from the costa near base and at apex to

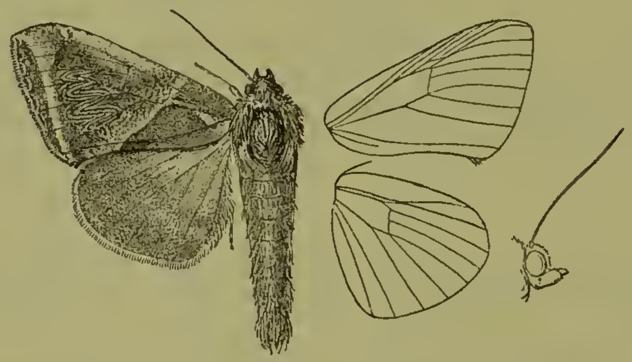

Fig. 111.—*Habrosyne derasa*, ♂. 1/1.

inner margin near outer angle, bordered inwardly by a white line which sends a tooth obliquely towards the base; a whitish streak along the costa crossed by some waved brown lines; small black striæ towards the apex; orbicular and reniform spots with pale outline; an extremely undulated quadruple postmedial line from vein 6 to near inner margin; a slightly curved or almost straight submarginal pale band; a waved marginal pale line; cilia pale, with a dark line through them. Hind wing fuscous.

The form *indica*, from Sikhim, is rather larger and brighter, whilst *fraterna*, from Dharmsála, is slightly greyer than the European *derasa*.

Larva reddish brown; a dark dorsal line; subdorsal round

white spots on 4th, 5th, and 6th somites, the two posterior spots sometimes obsolete.

Hab. Europe; Dharmsála; Sikhim; Burma. *Exp.* 40–54 millim.

325. **Habrosyne plagiosa,** *Moore, Lep. Atk.* p. 90; *C. & S.* no. 1631.

♀. Head and thorax pinkish brown, the collar, meso- and metathorax fringed with brown hair. Fore wing pinkish brown; an antemedial oblique pink line met below the costa by an oblique line from near the base; the area beyond the antemedial line suffused with brown; some short faint waved brown lines from the costa; orbicular spot represented by a speck; reniform elongate, with a dark outline; a faint waved double postmedial line filled in with bright chestnut towards inner margin; a curved pink band from apex to outer angle. Hind wing fuscous.

Hab. Sikhim. *Exp.* 56 millim.

326. **Habrosyne armata,** *Moore Lep. Atk.* p. 90; *Waterh. Aid,* ii, pl. 117; *C. & S.* no. 1629.

♂. Head and thorax pale ferruginous, the latter tinged with pink. Fore wing ferruginous, some pale marks at base; a pinkish oblique line from costa near base to inner margin beyond the middle; a postmedial pink patch on the costa; a double highly waved postmedial line; a curved submarginal pink band, with a grey patch on its inner edge; two whitish marginal lines. Hind wing pale fuscous.

Hab. Khási Hills. *Exp.* 66 millim.

327. **Habrosyne argenteipuncta,** n. sp.

♀. Head, thorax, and abdomen brown; thorax with paired tufts of pale grey, brown-tipped scales from below the patagia. Fore wing olive-brown; some blue-grey streaks from the costa; a silvery subbasal spot below the median nervure; a medial dark band with waved edges occupying the middle third of the wing, with some yellow on its outer edge towards inner margin; the reniform outlined with blue-grey; marginal area suffused with blue-grey. Hind wing fuscous.

Hab. Sikhim (*Knyvett*). *Exp.* 38 millim. Type in coll. Elwes.

328. **Habrosyne sanguinea,** *Moore, Lep. Atk.* p. 90; *C. & S.* no. 1632.

♂. Head and thorax bright ferruginous red; abdomen fuscous. Fore wing with a bright ferruginous basal patch, bearing a silvery spot below the median nervure, and with creamy white on its outer edge; the outer half of wing dark ferruginous brown, with a bright ferruginous streak and patch on inner margin, the latter with a waved white inner edge; two bright ferruginous patches

on costa with white inner edges; the waved lines as in *derasa*. Hind wing dark fuscous.

Hab. Sikhim. *Exp.* 44 millim.

Genus THYATIRA.

Thyatira, *Hübn. Verz.* p. 236 (1816).

Type, *T. batis*, Linn.

Range. Europe; Palæarctic Asia; Himalayas; Borneo; Java.

Palpi upturned, the first two joints heavily fringed with hair, the third joint of moderate length and naked; antennæ ciliated; collar and patagia fringed with long hair; third segment of abdomen with a tuft of dark scales. Fore wing with the apex rounded; thickly scaled; vein 6 from the angle of cell; 9 and 10 stalked, and almost anastomosing with 7 and 8 to form a short areole. Hind wing with vein 5 from near the lower angle of cell.

329. **Thyatira batis**, *Linn. Syst. Nat.* i, p. 836; *Buckler, Larvæ Brit. Butt. Moths*, pl. 54, fig. 2; *C. & S.* no. 1524.

Thyatira cognata, *Moore, P. Z. S.* 1888, p. 406; *Butl. Ill. Het.* vii, pl. 125, fig. 12.

Thyatira decorata, *Moore, P. Z. S.* 1881, p. 328, pl. 37, fig. 1; *C. & S.* no. 1625.

Thyatira vicina, *Guen. Noct.* i, p. 13.

Head and thorax pinkish white, with fine brown lines. Fore wing brown; a large basal pink patch with two brown spots on it towards inner margin, and bordered by a black line; two pinkish

Fig. 112.—*Thyatira batis*, ♂. $\frac{1}{1}$.

patches below the costa towards apex, one on inner margin, and a larger one with brown centre at outer angle, with a small spot on the margin above it; some waved medial and postmedial lines. Hind wing and abdomen fuscous.

The variety *cognata* is without the pink patch on inner margin of fore wing, and has a waved marginal black line; *decorata*, from Sikhim, has an extra pinkish spot in the cell of the fore wing, a smaller one beyond, and a more complete marginal series; the

palpi are usually pink; and it is probably a distinct species. *Vicina*, from Java, is like the typical form, but browner.

Larva brown; the 1st somite purplish, the 2nd and 3rd yellowish; paired dorsal hump on 2nd and 5th to terminal somites; oblique lateral dark stripes on 4th to 10th somites.

Hab. Europe; N.W. Himalayas; Sikhim; Java. *Exp.* 46 millim.

Genus GAURENA.

Gaurena, *Wlk. Cat.* xxxii, p. 619 (1864).

Type, *G. florens*, Wlk.

Range. Sikhim; Assam Hills.

Only differs from *Thyatira* in having vein 6 of the fore wing given off beyond the angle of cell.

330. **Gaurena florens**, *Wlk. Cat.* xxxii, p. 620; *Butl. Ill. Het.* vi, pl. 109, fig. 4; *C. & S.* no. 1627.

Head and thorax olive-brown. Fore wing olive-brown suffused with yellow, the markings pale yellow and white; a spot near base, a subbasal waved band; a spot in the cell, and a larger spot

Fig. 113.—*Gaurena florens*, ♂. 1/1.

at the end of it; a postmedial patch on the costa; another at apex, and one at outer angle; submarginal and marginal series of lunulate spots; costa and veins 1 and 2 spotted with yellow. Abdomen and hind wing pale yellowish fuscous.

Hab. Sikhim. *Exp.* 40 millim.

331. **Gaurena aurofasciata**, n. sp.

♂. Differs from *florens* in the head and thorax being olive; the subbasal band of the fore wing broader; no white spot at middle of cell; the spot at end of cell oblong and golden; a complete postmedial band between the patches on costa and outer angle; the submarginal and marginal lunules absent, except two above outer angle.

Hab. Sikhim (*Elwes*). *Exp.* 40 millim. Type in coll. Elwes.

332. **Gaurena florescens**, *Wlk. Cat.* xxxii, p. 620; *Butl. Ill. Het.* vi, pl. 109, fig. 5; *C. & S.* no. 1628.

Differs from *florens* in the head and thorax being spotted with yellow; the waved subbasal band of the fore wing replaced by a spot on the costa and one below median nervure; the spot at end of cell large; the postmedial spot placed below the costa; the patches at apex and near outer angle smaller; the marginal series larger.

Hab. Sikhim; Khásis; Nágas. *Exp.* 42 millim.

333. **Gaurena fuscescens**, n. sp.

♂. Head and thorax dark fuscous; abdomen pale. Fore wing dull brown suffused with fuscous; traces of numerous waved dark lines; a pale speck below median nervure near the base; an indistinct dark spot on discocellulars; a pale patch at apex. Hind wing pale fuscous, with an indistinct paler band just beyond the middle.

Hab. Nága Hills, 6000 feet (*Doherty*). *Exp.* 40 millim. Type in coll. Elwes.

334. **Gaurena lichenea**, n. sp.

♂. Head, thorax, and abdomen whitish grey. Fore wing whitish grey, crossed by numerous waved dark lines; indistinct antemedial, postmedial, and submarginal curved dark bands; orbicular and reniform spots indistinct, the former figure-of-8-shaped, the latter elongate; an oblique black apical streak and marginal lunulate line. Hind wing white, with an indistinct medial fuscous line and broad blackish marginal band.

Hab. Sikhim (*Möller*); Nága Hills, 6000 feet (*Doherty*). *Exp.* 38 millim. Type in coll. Elwes.

Genus **POLYPLOCA**.

Polyploca, *Hübn. Verz.* p. 273 (1816).
Palimpsestes, *Hübn. Verz.* p. 273 (1816).
Saronaga, *Moore, P. Z. S.* 1881, p. 330.

Type, *P. ridens*, Fabr., from Europe.

Range. Europe; N.W. Himalayas; Sikhim; Nága Hills.

Palpi with the first two joints hairy, the third porrect, rather long and naked. Antennæ with the joints wide and flattened; patagia heavily fringed with hair. Fore wing thickly scaled, the apex acute and rather produced; vein 6 from above the angle of cell; vein 9 anastomosing with 7 and 8 to form an areole. Hind wing with vein 5 from just below the middle of discocellulars or just above the lower angle of cell, or stalked with vein 4. Head and frons tufted; abdomen with a tuft on 3rd segment.

335. **Polyploca orbicularis,** *Moore, P. Z. S.* 1888, p. 407; *C. & S.* no. 1644 c.

Head and thorax grey-brown; the collar with a darker edge; abdomen fuscous, the tuft on 3rd somite blackish. Fore wing grey-brown; a dark spot at base; a waved subbasal line; curved

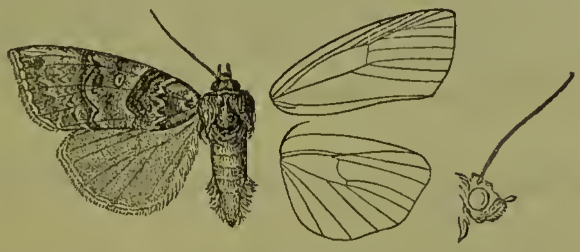

Fig. 114.—*Polyploca orbicularis*, ♂. 1/1.

treble ante- and postmedial lines; the orbicular and reniform spots whitish or reddish outlined with black; a waved line beyond the postmedial line and another submarginal commencing as a black oblique streak from the apex; a waved marginal line; some dark specks on costa near apex. Hind wing fuscous.

Hab. Dharmsála; Sikhim. *Exp.* 44 millim.

336. **Polyploca anguligera,** n. sp.

♂. Differs from *orbicularis* in the double antemedial lines of the fore wing being straighter; the double postmedial lines highly angled outwards beyond the cell; the oblique streak from apex more prominent.

Hab. Nága Hills (*Doherty*). *Exp.* 42 millim. Type in coll. Elwes.

337. **Polyploca renalis,** *Moore, P. Z. S.* 1888, p. 407; *C. & S.* no. 1644 d.

Differs from *orbicularis* in the lines of the fore wing being less well defined; the ante- and postmedial lines more dentate, the latter highly angulate; the orbicular and reniform spots ochreous, with tufts of raised dark scales on their lower edges. Abdomen and hind wing darker.

Hab. Dharmsála. *Exp.* 42 millim.

338. **Polyploca albidisca,** *Warr. P. Z. S.* 1888, p. 299; *C. & S.* no. 1642 a.

Polyploca dubia, *Warr. P. Z. S.* 1888, p. 300; *C. & S.* no. 1644 b.

♀. Differs from *orbicularis* in the collar being without the dark outline. Fore wing with the dark speck further from the base and oblique, with a white spot inside it; three waved antemedial black lines at even distances apart; the lines of the outer area

more irregular; the orbicular and reniform spots formed by black streaks with a few orange scales round them, the area below them grey.

The form *dubia* is without the white speck at base of fore wing, the innermost of the three lines is obsolescent, and another is developed outside them, so that the series becomes medial; the orbicular and reniform spots less prominent and without grey suffusion below them; the lines of outer area obsolescent. Some specimens have the medial area of fore wing suffused with fuscous.

Hab. Kangra, Punjab. *Exp.* 36 millim.

339. **Polyploca cuprina,** *Moore, P. Z. S.* 1881, p. 331, pl. 37, fig. 3; *C. & S.* no. 1644.

Head and thorax grey-brown; abdomen paler. Fore wing grey-brown with a faint greenish tinge; indistinct double ante- and postmedial curved and waved lines, and traces of other waved single lines; a dark streak on the discocellulars, with a black spot inside it; a waved submarginal pale line. Hind wing pale fuscous.

Hab. Sikhim. *Exp.* 38 millim.

340. **Polyploca albicosta,** *Moore, P. Z. S.* 1867, p. 45; *C. & S.* no. 1626.

♂. Head and thorax dark brown; abdomen paler. Fore wing dark brown; the costal area suffused with white and greenish at base; numerous transverse waved dark lines, of which the most distinct are one antemedial and one postmedial; orbicular and reniform spots large and confluent, their upper portions outlined with black; an oblique black apical streak; a lunulate marginal line. Hind wing pale fuscous, with slightly darker medial and broad marginal bands.

The race from the N.W. Himalayas has the palpi and basal joint of antennæ pink; the collar fringed with pink; fore wing with the costal area suffused with pinkish white; the orbicular and reniform spots on a diffused yellow patch.

Hab. Simla; Sikhim. *Exp.* 48–50 millim.

341. **Polyploca albibasis,** n. sp.

♀. Head, thorax, and abdomen grey, slightly tinged with rufous. Fore wing with the costa much arched at base and the apex very acute; silvery grey; the base white; a whitish fascia along the costa from one-fifth from base to apex; waved ante- and postmedial dark lines and submarginal series of white specks. Hind wing pale fuscous, the outer area darker.

♂. In specimens from Simla the ground-colour of the fore wing is greenish: a fine white submarginal line is present, and the hind wing is pale ochreous.

Hab. Simla; Sikhim. *Exp.* 68 millim. Type in coll. Elwes.

Genus **NEMACEROTA**, nov.

Type, *N. cinerea*, Warr.
Range. Punjab; Sikhim.

Antennæ slender and ciliate, simple in female. Palpi upturned, reaching vertex of head; the first two joints hairy, the third naked and short. Fore wing with the apex acute and rather produced; slightly scaled; vein 6 from above angle of cell; veins 9 and 10 not quite anastomosing with 7 and 8 to form the areole. Hind wing with vein 5 from the centre of the discocellulars.

342. **Nemacerota cinerea**, *Warr. P. Z. S.* 1888, p. 300; *C. & S.* no. 1644 E.

Pale grey. Fore wing with two short dark streaks at the base; the basal area brownish and bounded by an indistinct waved dark

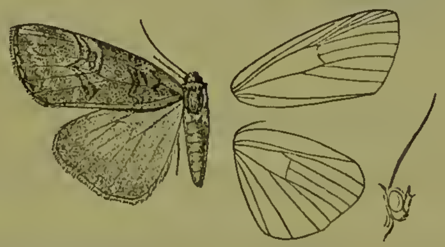

Fig. 115.—*Nemacerota cinerea*, ♂. 1/1.

line; an indistinct double postmedial waved line and pale waved submarginal line. Hind wing paler.

Hab. Thandiáni, Punjab. *Exp.* 40 millim.

343. **Nemacerota alternata**, *Moore, P. Z. S.* 1881, p. 331, pl. 37, fig. 2; *C. & S.* no. 1643.

♀. Head and thorax grey-brown; the vertex of head and collar red-brown; abdomen paler. Fore wing greenish; ante- and post-medial pinkish bands and curved and waved black lines well defined towards the costa; traces of other single lines. Hind wing pale fuscous.

Hab. Sikhim. *Exp.* 42 millim.

Genus **TOXOIDES**, nov.

Type, *T. longipennis*, Hmpsn.
Range. Sikhim.

Palpi upturned, reaching vertex of head, the second joint fringed with hair, the third naked and porrect; antennæ flattened and with short fasciculated cilia. Fore wing very long and narrow, the costa highly arched, the apex obtuse; vein 6 from angle of cell; 7 and 8 on a long stalk; 9 and 10 stalked. Hind wing with the

outer margin slightly angled at vein 3; veins 3 and 4 from angle of cell; 5 from centre of discocellulars.

344. **Toxoides longipennis**, n. sp.

♂. Head pale, slightly tinged with rufous; thorax grizzled brown and grey, the collar tinged with rufous; abdomen pale fuscous. Fore wing grey suffused with fuscous, especially from end of cell to apex; the base and costa rufous; numerous faint

Fig. 116.—*Toxoides longipennis*, ♂. $\frac{1}{1}$.

waved lines. Hind wing fuscous, with traces of a medial line; the cilia paler.

Hab. Sikhim. *Exp.* 58 millim. Type in coll. Knyvett.

Species formerly recorded as Indian which are omitted.

Risoba basalis, Moore,	C. & S. no.	1633,	is a Noctua.
,, *confluens*, Moore,	,, ,,	1634,	,,
,, *diversipennis*, Wlk.,	,, ,,	1635,	,,
,, *literata*, Moore,	,, ,,	1636,	,,
,, *obstructa*, Moore,	,, ,,	1637,	,,
,, *prominens*, Moore,	,, ,,	1638,	,,
,, *repugnans*, Wlk.,	,, ,,	1639,	,,
,, *vialis*, Moore,	,, ,,	1640,	,,
Pitrasa variegata, Moore,	,, ,,	1645,	,,
,, *vitellina*, Moore,	,, ,,	1646,	,,
Tyracona obliqua, Moore,	,, ,,	1647,	,,
,, *transversa*, Moore,	,, ,,	1648,	,,
Sydiva nigrogrisea, Moore,	,, ,,	1649,	,,
Osica undulata, Moore,	,, ,,	1650,	,,

Lazanda fasciata, Wlk., C. & S. no. 1651 = *Labanda muscosa*, Wlk., C. & S. no. 3016, is a Noctua.

Family SESIIDÆ.

Diurnal Lepidoptera, which feed on the wing and settle on leaves in hot sunshine; the flight very rapid.

Antennæ often dilated or knobbed. Legs often with thick tufts of hair; mid tibiæ with one pair of spurs; hind tibiæ with two pairs. Frenulum present. Wings generally more or less hyaline; fore wing with veins 1 *a* and 1 *b* forming a fork at base; 1 *c* absent; veins 4 to 11 given off at almost even distances from the cell. Hind wing with three internal veins; vein 8 coincident with 7.

Many species are close "mimics" of various Hymenopterous forms.

Larva: a fleshy internal feeder on bark or pith, with five pairs of prolegs.

Pupa armed with hooks for movement in the galleries.

Key to the Genera.

a. Hind legs without tufts of hair on the joints.
- a'. Fore wing with veins 7 and 8 stalked.
  - a^2. Proboscis wanting.
    - a^3. Fore wing with vein 5 present. Hind wing with veins 3 and 4 from angle of cell.
      - a^4. Hind wing with discocellulars oblique; palpi of medium length .... 1. TROCHILIUM, p. 188.
      - b^4. Hind wing with discocellulars nearly erect; palpi longer .. 2. SPHECODOPTERA, p. 189.
    - b^3. Fore wing with vein 5 absent .. 3. ANTHRENOPTERA, [p. 190.
  - b^2. Proboscis present.
    - a^3. Hind wing with discocellulars almost erect.
      - a^4. Fore wing with vein 2 present. Hind wing with veins 3 and 4 from cell.
        - a^5. Hind tarsi of moderate length, and not fringed with scales.
          - a^6. Abdomen with lateral tufts on the terminal segments .... 4. TRILOCHANA, p. 190.
          - b^6. Abdomen with the terminal tuft only .... 5. SCIAPTERON, p. 191.
        - b^5. Hind tarsi extremely long and fringed with scales on the last four joints above . 6. MACROTARSIPUS, p. 194.
      - b^4. Fore wing with vein 2 absent. Hind wing with veins 3 and 4 stalked .... 7. ICHNEUMENOPTERA, [p. 194.

b^3. Hing wing with discocellulars oblique .... 8. SESIA, p. 196.
b'. Fore wing with veins 7 and 8 not stalked.
a^2. Palpi upturned. Hind wing with vein 3 from end of cell .... 9. ADIXOA, p. 198.
b^2. Palpi porrect. Hind wing with veins 2 and 3 from a point before end of cell.................... 10. TRICHOCEROTA, p. 199.
b. Hind legs with tufts of hair on the joints.
a'. Legs with moderate or slight tufts on the joints.
a^2. Fore wing with veins 5 and 7 present.
a^3. Hind wing with veins 2 and 3 from a point.
a^4. Fore wing with veins 7 and 8 stalked .... 11. TINTHIA, p. 199.
b^4. Fore wing with veins 7 and 8 not stalked .... 12. CERATOCOREMA, p. 200.
b^3. Hind wing with veins 3 and 4 from angle of cell .... 13. ASCHISTOPHLEPS, p. 200.
b^2. Fore wing with veins 5 and 7 absent. Hind wing with veins 3 and 4 stalked .... 14. OLIGOPHLEBIA, p. 201.
b'. Hind legs with immensely developed hairy clothing.
a^2. Hind legs with the hair evenly disposed. Hind wing with vein 3 from before end of cell; 6 and 7 stalked .... 15. MELITTIA, p. 202.
b^2. Hind legs with the hair disposed in uneven tufts. Hind wing with vein 3 from end of cell; veins 6 and 7 not stalked; club of antenna greatly developed............. 16. LENYRA, p. 205.

Fig. 117.—*Trochilium ommaticeforme*, ♂. $\frac{1}{1}$.

Genus TROCHILIUM.

Trochilium, *Scop. Int. Hist. Nat.* p. 414 (1777).
Sphecia, *Hübn. Verz.* p. 127 (1818).

Type, *T. apiforme*, Cl., from Europe.
Range. The Palæarctic Region.
Antennæ of male pectinated; palpi upturned and reaching the

top of head; mid and hind femora but slightly hairy. Fore wing with veins 7 and 8 stalked. Hind wing with veins 3 and 4 from end of cell, the discocellulars very oblique.

345. **Trochilium ommatiæforme,** *Moore, MS.*

♂. Palpi yellow; antennæ, thorax, and abdomen red-brown, with a few yellow scales; legs yellow. Wings hyaline, the veins and margins very narrowly brown.

Hab. Baluchistan. *Exp.* 38 millim.

346. **Trochilium ignicolle,** n. sp.

Antennæ rufous; palpi yellow; vertex of head rufous; collar fiery orange; thorax brown; abdomen brown, the second segment fringed with red, the terminal segments fiery orange. Wings hyaline, with narrow brown margins; costa of fore wing brown; the costal, median, and internal nervures slightly streaked with red.

Hab. Simla (*Harford*). *Exp.*, ♂ 36, ♀ 46 millim. Type in B. M.

Genus **SPHECODOPTERA**, nov.

Type, *S. repanda*, Walk.

Range. N. India.

The third joint of palpus longer than in *Trochilium*; the tibiæ, especially those of hind legs, much more thickly clothed with hair. Hind wing with veins 3 and 4 stalked; discocellulars more erect. Antennæ almost simple, with a slight bristle to each segment.

347. **Sphecodoptera repanda,** *Wlk. Cat.* viii, p. 11; *C. & S.* no. 189.

♂. Antennæ orange, black towards tips; legs fulvous, tibiæ with some black hairs; palpi, collar, and tegulæ with some yellow scales; thorax and abdomen black, the former with a yellow stripe on vertex, the latter with fulvous segmental bands, the last two

Fig. 118.—*Sphecodoptera repanda*, ♂. $\frac{1}{1}$.

segments fulvous. Wings hyaline, with the veins and margins narrowly fulvous; slight black streaks in the interspaces of fore wing towards apex, and the costa and discocellulars streaked with orange.

Hab. Simla. *Exp.* 50 millim.

348. **Sphecodoptera flavicollis**, n. sp.

♀. Differs from *repanda* in the antennæ being wholly black and shorter; collar yellow; two yellow streaks on meso- and metathorax, the latter fringed with yellow; abdomen bright yellow, the first two segments black, the 3rd, 4th, and 5th segments with terminal black bands, decreasing in width posteriorly. Legs yellow; hind legs with a black patch on the inside at end of tibia. Wings as in *repanda*; fore wing without the black streaks in the interspaces towards apex.

Hab. Skardo, Kashmir, 8000 feet (*Leech*). *Exp.* 48 millim. Type in coll. Leech.

Genus **ANTHRENOPTERA.**

Anthrenoptera, *Swinh. Cat. Het. Mus. Oxon.* p. 35 (ined.).

Type, *A. contracta*, Walk.
Range. Assam.

♂. The antennæ more heavily pectinated than in *Trochilium*; the third joint of palpi but slightly longer; fore wing narrower, with vein 5 wanting; hind wing with veins 3 and 4 stalked; tibiæ fringed with hair, especially those of hind legs.

Fig. 119.—*Anthrenoptera contracta*, ♂. ½.

349. **Anthrenoptera contracta**, *Walk. Cat.* viii, p. 11; *C. & S.* no. 188.

♂. Differs from *Sphecodoptera repanda* in the tegulæ being wholly yellow; the margins of wings more broadly fulvous; fore wing with a large apical fulvous patch.

Hab. Assam. *Exp.* 34 millim.

Genus **TRILOCHANA.**

Trilochana, *Moore, Lep. Atk.* p. 9 (1879).

Type, *T. scolioides*, Moore.
Range. Sikhim; Burma.

The apex of the fore wing somewhat pointed; abdomen with lateral tufts on last two segments; the anal tuft largely developed. Venation, antennæ, palpi, and legs as in *Sphecodoptera*.

*350. **Trilochana scolioides**, *Moore, Lep. Atk.* p. 10, pl. ii, fig. 2; *C. & S.* no. 206.

Antennæ dark brown. Palpi, thorax, and abdomen purple-brown, the segments of the last fringed with grey; the last two segments at sides and below and anal tuft red, some black hairs fringing the tuft above. Legs clothed with long black hairs, hind tarsi yellowish. Wings shining olive-green, a short narrow transparent basal streak on fore wing and two triangular streaks on the hind wing.

Hab. Sikhim. *Exp.* 47 millim.

351. **Trilochana ignicauda**, n. sp.

♂. Differs from *scolioides* in the head, thorax, abdomen, and wings being uniform dark purplish metallic blue; abdomen with the lateral and anal tufts fiery red. Fore wing without a hyaline

Fig. 120.—*Trilochana ignicauda*, ♂. $\frac{1}{1}$.

streak; hind wing with three hyaline streaks at base. Underside with the outer half of wings bronzy. Palpi fringed with grey hairs; legs uniform black.

Hab. Momeit, Burma (*Doherty*). *Exp.* 29 millim. Type in coll. Elwes.

Genus SCIAPTERON.

Sciapteron, *Staudgr. Stettin. Ent. Zeit.* 1856, p. 195.
Pramila, *Moore, Lep. Atk.* p. 9 (1879).
Pseudosesia, *Feld. Sitzungsb. Akad. Wiss. Wien*, xliii, 1, p. 28 (1861).

Type, *S. tabaniforme*, Rott., from Europe.

Range. The Palæarctic Region; Sikhim; Burma.

Palpi upturned, the third joint short, as in *Trochilium*. Venation of fore wing as in that genus; hind wing with the discocellulars but slightly oblique; veins 3 and 4 from end of cell. Anal tuft strongly developed; hind tibiæ but slightly fringed with hair.

Sect. I. Male with antennæ bipectinated.

352. **Sciapteron flammans**, n. sp.

Palpi, head, and legs orange-yellow, with a few black scales on them; antennæ orange; collar black, fringed with yellow; thorax black, the tegulæ and metathorax fringed with yellow; abdomen blue-black, each segment with a bright yellow band; anal tuft black and orange. Fore wing clothed with orange and black scales,

the veins black. Hind wing hyaline; the veins orange and black; outer margin and cilia black.

Hab. Murree. *Exp.*, ♂ 26, ♀ 31 millim. Type in coll. Leech.

SECT. II. Male with antennæ fasciculated.

353. **Sciapteron grotei,** *Moore, P. Z. S.* 1879, p. 414; *C. & S.* no. 207.

Sciapteron rangoonensis, *Swinh. Trans. Ent. Soc.* 1890, p. 165.

♂. Antennæ and vertex of head black; palpi and frons yellow; genæ white; thorax black, with lateral yellow streaks; metathorax with a yellow band; abdomen black, with yellow bands on all except the 1st and 3rd segments; anal tuft black, shading to brown; legs yellow and black; tarsi white-ringed. Wings yellowish hyaline; fore wing with the margins and discocellulars broadly black, narrowly so in hind wing.

Hab. Rangoon. *Exp.* 30 millim.

354. **Sciapteron cæruleimicans,** n. sp.

♂. Differs from *rangoonensis* in the palpi being black and orange; the frons grey, surrounded by white; thorax and abdomen with barely a trace of orange markings and bands; legs with less yellow; fore wing with some brilliant sky-blue metallic scales at and beyond the lower end of the cell.

Hab. E. Pegu, 1000 ft., Apr. (*Doherty*). *Exp.* 30 millim. Type in coll. Elwes.

355. **Sciapteron atkinsoni,** *Moore, Lep. Atk.* p. 9, pl. ii, fig. 1; *C. & S.* no. 190.

♀. Head, thorax, and abdomen bluish black; legs brown; palpi below and tarsal joints fringed with white. Wings hyaline; veins, costa, cilia, and a narrow discocellular streak to the hind wing black. Fore wing with a broad orange-red black-bordered discocellular streak.

Hab. Sikhim. *Exp.* 35 millim.

SECT. III. Male with antennæ simple.

356. **Sciapteron noblei,** *Swinh. Trans. Ent. Soc.* 1890, p. 166.

Sciapteron jucunda, *Swinh. Trans. Ent. Soc.* 1890, p. 167.

Fig. 121.—*Sciapteron noblei*, ♂. 1/1.

The antennæ fulvous; palpi yellow. Head black; genæ white; tegulæ more or less fulvous; thorax and abdomen blue-black, with

traces of orange bands above and white below; anal tuft blue-black above, with some orange below in one male, wholly orange in another male, this being the form named *jucunda*; in the female black, with the tip orange. Legs black; the tibiæ and tarsi ringed with fulvous and white. Fore wing metallic blue-black, with a purple tinge. Hind wing hyaline, the veins and margins narrowly black; cilia brownish.

Hab. Rangoon. *Exp.* 34 millim.

*357. **Sciapteron sikkima,** *Moore, Lep. Atk.* p. 9; *C. & S.* no. 208.

♂. Differs from *noblei* in the antennæ being black above; the thorax with a chrome-yellow streak on each side. Fore tarsi white; mid and hind tarsi spotted with white.

Hab. Sikhim. *Exp.* 30 millim.

358. **Sciapteron metallicum,** n. sp.

Differs from *noblei* in the thorax being wholly blue-black; abdomen blue-black, the segments slightly fringed with yellow; palpi black, with some grey hairs; thorax greyish below; tarsi black.

Hab. Karen Hills (*Fea*). *Exp.* 32 millim. Type in coll. Moore.

359. **Sciapteron gracile,** *Swinh. Trans. Ent. Soc.* 1890, p. 168.

♀. Antennæ, head, and thorax orange-yellow; abdomen black above, with the 1st and 3rd segments and anal tuft orange, and traces of orange bands below. Fore wings orange, powdered with a few black scales. Hind wing hyaline; the veins orange; cilia of both wings black. Legs orange and black.

Hab. Rangoon. *Exp.* 34 millim.

360. **Sciapteron cupreivitta,** n. sp.

♂. Palpi yellow; frons grey, surrounded by white; head, thorax, and abdomen blue-black, the 5th segment of the last banded with yellow; anal tuft blue-black, with two tufts of yellow scales above; tibiæ banded with yellow; tarsi yellow. Fore wing above brown, suffused with blue-black; slight yellow hyaline streaks between the nervules; a brilliant coppery-red streak in the end of the cell; below coppery gold. Hind wing with the discocellular band coppery; the veins, margins, and cilia brown.

Hab. Eastern Pegu, 1000 feet, April (*Doherty*). *Exp.* 28 millim. Type in coll. Elwes.

361. **Sciapteron tenuimarginatum,** n. sp.

♀. Differs from typical *Sciapteron* in vein 5 of hind wing arising from near the upper angle of cell. Palpi yellow; frons white;

antennæ orange; head and thorax dark, much marked with yellow; abdomen dark, the segments fringed with yellow. Legs yellow, some dark hairs on end of hind tibia. Wings hyaline, the veins, margins, and discocellulars of fore wing very narrowly dark.

Hab. Karen Hills (*Fea*). *Exp.* 32 millim. Type in coll. Moore.

Genus **MACROTARSIPUS**, nov.

Type, *M. albipunctus*, Hmpsn.

Range. Burma.

Palpi and neuration as in *Sciapteron*, except that vein 6 of the hind wing is from the upper angle of cell. Antennæ simple and very long. Legs very long; hind tarsi extremely elongate, the four terminal joints thickly fringed with scales above.

362. **Macrotarsipus albipunctus**, n. sp.

♂. Antennæ, head, thorax, and abdomen metallic blue-black. Palpi blue-black, white below. Legs blue-black, coxæ of fore legs

Fig. 122.—*Macrotarsipus albipunctus*, ♂. $\frac{1}{1}$.

fringed with white; a ring of white scales on hind tibia at each pair of spurs, and at end of first joint of tarsus. Wings hyaline: the veins narrowly black; the margins and discocellulars of fore wings somewhat broadly black.

Hab. Bhámo, Burma (*Fea*). *Exp.* 24 millim. Type in coll. Moore.

Genus **ICHNEUMENOPTERA**, nov.

Type, *I. auripes*, Hmpsn.

Range. Bengal; Assam; Burma.

♂. Palpi with the third joint longer than in *Sciapteron*. Antennæ long and simple. Legs naked. Abdominal tuft long. Fore wing with vein 2 absent; the stalk of veins 7 and 8 shorter. Hind wing with veins 3 and 4 stalked; 6 from near the upper angle of the cell.

363. **Ichneumenoptera auripes**, n. sp.

♂. Palpi yellow below, black above. Frons white; antennæ, head, thorax, abdomen, and anal tuft black with a few scattered

yellow scales. Fore legs orange with the coxæ yellow. Hind legs with the femur blue-black, tibia orange with a blue-black

Fig. 123.—*Ichneumenoptera auripes*, ♂. 1/1.

band, tarsus blue banded with white. Wings transparent, the veins and margins narrowly black with a few yellow scales; cilia brown.

Hab. Sibságar; E. Pegu, 4000 feet, April; Tenasserim valley (*Doherty*). *Exp.* 26 millim. Type in coll. Elwes.

364. **Ichneumenoptera flavicincta**, n. sp.

♂. Differs from *auripes* in each segment of the abdomen being fringed with yellow. Mid and hind legs black, ringed with yellow. Fore wing with the margins and discocellular band more broadly black. (Fore legs wanting.)

Hab. Tenasserim Valley (*Doherty*). *Exp.* 19 millim. Type in coll. Druce.

365. **Ichneumenoptera xanthosoma**, n. sp.

♂. Differs from *auripes* in the frons and vertex of head being metallic blue, a white stripe down each side of frons; head fringed with yellow behind; collar metallic blue; thorax yellow striped with black; abdomen yellow. Each segment fringed with black; legs yellow, hind tibia with two blue-black spots above.

Hab. Moulmein. *Exp.* 20 millim. Type in coll. Moore.

366. **Ichneumenoptera flavipalpus**, n. sp.

♂. Differs from *auripes* in the palpi being wholly yellow; the frons dark; thorax and abdomen brown, suffused with yellow. Fore wing hyaline; the veins and margins, a discocellular band, and the outer area, brown suffused with yellow. Hind wing hyaline; the veins and margins narrowly brown. Legs wholly yellow.

Hab. Barrackpore. *Exp.* 20 millim. Type in coll. Moore.

367. **Ichneumenoptera ignifera**, n. sp.

♂. Palpi black above, yellow below; frons surrounded by white; antennæ, thorax, and abdomen black, anal tuft fiery red; abdomen red and white below towards extremity. Fore wing yellowish hyaline; the veins, discocellular band, and margins narrowly

brown, the outer margin with a broad brown band. Hind wing hyaline, the veins and margins narrowly brown.

Hab. Karen Hills (*Fea*); Bernardmyo (*Doherty*). *Exp.* 28 millim. Type in coll. Moore.

Genus SESIA.

Sesia, *Fabr. Syst. Ent.* p. 547 (1775); *Schrank, Fauna Boica,* ii, 1, p. 153 (1801).
Ægeria, *Fabr. Illig. Mag. Ins.* vi, p. 288 (1807).

Type, *S. tipuliformis*, Clerk, Europe.

Range. All the regions, except Australasian.

Palpi slightly longer and more slender than in the preceding genera. Hind wing with the discocellulars oblique, the venation otherwise as in *Sciapteron*. Anal tuft large in the male.

In the typical section the antennæ are heavily ciliated in the male.

Sect. II. The antennæ simple in the male.

368. **Sesia quinquecincta**, n. sp.

Head and thorax blue-black; abdomen black, with five broad yellow bands; anal tuft and legs blue-black, the latter slightly fringed with white; coxæ of legs white. Wings hyaline; the veins, margins, and cilia smoky brown; costa and discocellular streak of fore wing blue-black. Hind tibiæ not fringed with hair.

Hab. Bernardmyo, Burma, 6000 feet, May (*Doherty*). *Exp.* 24 millim. Type in coll. Elwes.

369. **Sesia minuta**, *Swinh. Trans. Ent. Soc.* 1890, p. 171, pl. vi, fig. 5.

♀. Antennæ black; palpi ochreous; frons with the centre grey surmounted by white; collar whitish; thorax with a few orange scales; abdomen black, the 2nd, 4th, and 5th segments with yellow bands above; all the segments white—banded below. Legs black and ochreous. Fore wing hyaline with opal tints, the veins and margins dark, and the whole outer area suffused with purplish fuscous; a prominent orange discocellular band. Hind wing hyaline, the veins and margins narrowly black. Underside of fore wing with the basal part yellow. Hind tibiæ slightly hairy.

Hab. Rangoon. *Exp.* 24 millim.

370. **Sesia unicincta**, n. sp.

Differs from *minuta* in the third segment of the abdomen only having a yellow band. Fore wing with the margins narrowly black; the area beyond the cell hyaline, with a few yellow scales beyond the discocellulars and near the apex.

Hab. Karen Hills (*Fea*). *Exp.* 18 millim. Type in coll. Moore.

371. **Sesia xanthosticta**, n. sp.

♂. Palpi dark above, yellow below; frons black and surrounded by yellow. Antennæ, head, thorax, and abdomen black; abdomen with a yellow dorsal patch on first segment; a yellow sublateral line. Legs black, with some yellow on femora and tibiæ. Fore wing black, with a hyaline patch edged with yellow in the cell; a yellow patch beyond the cell, the veins crossing it black. Hind wing hyaline, the base and costa slightly yellow; the veins, outer margins, and cilia black.

Hab. Kashmir (*Leech*). *Exp.* 18 millim. Type in coll. Leech.

372. **Sesia tricincta**, *Moore, Lep. Atk.* p. 8; *C. & S.* no. 194.

♂. Brown; the antennæ grey at base; the palpi below, collar, streaks at sides of thorax, and basal medial and anal bands of abdomen yellow. Legs brown, tarsi with white bands. Wings opalescent hyaline, with narrow purple-brown borders and discocellular bands.

Hab. Sikhim. *Exp.* 22 millim.

*373. **Sesia flava**, *Moore, Lep. Atk.* p. 8; *C. & S.* no. 193.

Antennæ yellow with the tips brown; palpi, collar, and streaks on vertex and sides of thorax yellow; abdomen brown, with yellow segmental bands; anal tuft yellow. Legs yellow, banded with brown. Fore wing hyaline, the base and apex yellowish; veins and margins narrowly brown. Hind wing hyaline, with the cilia brown.

Hab. Sikhim. *Exp.* 17 millim.

374. **Sesia flavicaudata**, *Moore, Lep. Ceyl.* iii, p. 550, pl. 211, fig. 12.

♂. Purple-black; genæ white; palpi below, collar, and a narrow band on the fifth abdominal segment yellow; anal tuft orange.

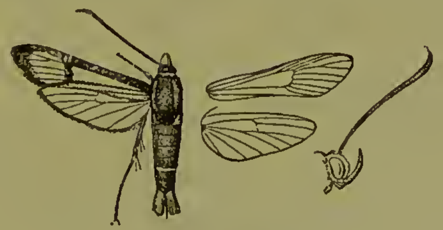

Fig. 124.—*Sesia flavicaudata*, ♂. $\frac{2}{1}$.

Legs banded with yellow. Wings hyaline, with the veins, margins, and discocellular band purple-black, broadly so on fore wing, narrowly on hind wing.

Hab. Punduloya, Ceylon. *Exp.* 17 millim.

375. **Sesia flavipes**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, figs. 19, 20.

Metallic blue-black; palpi, collar, and tibiæ orange. Abdomen with narrow segmental orange bands expanding into wide lateral patches; anal tuft blue-black above, orange below. Wings hyaline; the margins, discocellulars, and veins purple-black: fore wing with the margins broadly black, and nearly the whole outer area dark with narrow yellow streaks between the veins. *Female* with the abdominal orange bands broader.

Hab. Bangalore; Punduloya, Ceylon. *Exp.*, ♂ 16, ♀ 14 millim.

Genus **ADIXOA**, nov.

Type, *A. alterna*, Walk.

Range. S. India; Tenasserima.

♂. Antennæ with fascicles of cilia; palpi as in *Sciapteron.* Fore wing with veins 7 and 8 not stalked; the venation otherwise as in *Sciapteron.* Fore legs with a strong tibial tuft of hair; the other pairs but slightly hairy.

376. **Adixoa alterna**, *Wlk. Cat.* xxxi, p. 10; *C. & S.* no. 192.

♂. Purple-brown; frons, collar, tegulæ, and metathorax yellow. Abdomen with lateral yellow spots on the first and fourth seg-

Fig. 125.—*Adixoa alterna*, ♂. $\frac{1}{1}$.

ments, one each on the vertex of the second and seventh segments; anal tuft black, the base of the tuft above and below yellow. Fore wing purple-brown suffused with yellow; a hyaline streak in the cell and four beyond. Hind wing hyaline; the veins, margins, and discocellular band purple-black.

Hab. Coimbatore, S. India. *Exp.* 28 millim.

377. **Adixoa auricollum**, n. sp.

♂. Palpi, antennæ, head, thorax, and abdomen blue-black; frons white, head fringed with white behind; collar fringed with orange; abdomen with orange bands on three last segments and on all the segments below. Legs blue-black; fore leg with the tarsi white; hind leg with some pale hairs on tibia. Fore wing blue-black, with hyaline spaces in and below the cell, and a small quadrifid space beyond. Hind wing hyaline, with broad blue-black margins and discocellular band.

Hab. Tenasserim Valley (*Doherty*). *Exp.* 25 millim. Type in coll. Druce.

Genus **TRICHOCEROTA**, nov.

Type, *T. ruficincta*, Hmpsn.
Range. Burma.

Antennæ with tufts of long cilia arising from serrations. Palpi somewhat slight and porrect. Fore wing with vein 4 absent; 7 and 8 not stalked. Hind wing with veins 2 and 3 from near together and some way before the end of the cell; vein 6 from the upper angle of the cell. Hind tibiæ naked.

378. **Trichocerota ruficincta**, n. sp.

♂. Palpi reddish; head, thorax, and abdomen black; thorax with slight reddish streaks; abdomen with red bands on the fifth

Fig. 126.—*Trichocerota ruficincta*, ♂. 1/1.

and seventh segments. Fore wing dark reddish brown, with slight hyaline streaks in the cell and between veins 2, 3, and 4. Hind wing yellowish hyaline; the veins, margins, and cilia black.

Hab. Eastern Pegu, 500 feet, April (*Doherty*). *Exp.* 22 millim. Type in coll. Elwes.

Genus **TINTHIA.**

Tinthia, *Walk. Cat.* xxxi, p. 23 (1864).

Type, *T. varipes*, Walk., from Celebes.
Range. Japan; China; Celebes; S. India.

Antennæ slender and serrated in both sexes, hardly dilated before the end; palpi slight and porrect. Legs with slight tufts of hair at the joints. Wings very narrow; fore wing with the venation of *Sesia*; hind wing with veins 2 and 3 given off at a point before the end of the cell; 6 and 7 from the upper angle of cell; discocellulars nearly erect.

379. **Tinthia cupreipennis**, *Walk. Cat.* xxxi, p. 11; *C. & S.* no. 191.

♂. Brown with iridescent colours; the palpi, tufts on legs, and

Fig. 127.—*Tinthia cupreipennis*, ♂. 2/1.

narrow segmental bands to the abdomen ochreous; anal tuft

black, orange at the tip. Fore wing irrorated with ochreous scales. Hind wing hyaline, the veins and margins dark.

Hab. Coimbatore, S. India. *Exp.* 18 millim.

Genus **CERATOCOREMA**, nov.

Type, *C. postcristatum*, Hmpsn.

Range. Ganjam ; Poona.

Antennæ with two series of very long cilia. Palpi short and porrect. Fore leg with tibia slightly hairy ; mid leg with the tibia and first tarsal joint strongly tufted with hair ; hind leg with two tufts of hair on the tibia and one on the first tarsal joint. Abdomen short and stout, with lateral anal tufts. Wings short ; fore wing with veins 7 and 8 not stalked ; hind wing with veins 2 and 3 from a point before the end of the cell, vein 6 from upper angle of cell.

380. **Ceratocorema postcristatum**, n. sp.

♂. Head, thorax, and abdomen reddish brown ; anal tufts reddish at base, black at tip. Mid legs clothed with reddish

Fig. 128.—*Ceratocorema postcristatum*, ♂. $\frac{1}{1}$.

hairs, those on the first tarsal joint blue-black ; hind legs clothed with mingled reddish and blue-black hairs. Wings yellowish hyaline, the veins and margins red-brown, narrowly so on the hind wing.

Hab. Berhampore, Ganjam (*Minchin*) ; Poona. *Exp.* 16 millim. Type in coll. Elwes.

Genus **ASCHISTOPHLEPS**, nov.

Type, *A. lampropoda*, Hmpsn.

Range. Assam ; Pegu.

♂. Antennæ simple. Palpi upturned, the third joint long and slightly porrected. Mid legs with terminal tufts of hairs on the tibiæ ; hind legs with two strong tufts on the tibiæ, and the first tarsal joint strangly tufted. Abdomen slight in the typical species. Wings rather short ; fore wing with veins 7 and 8 not stalked ; hind wing as in *Sciapteron*.

381. **Aschistophleps lampropoda**, n. sp.

♂. Head, thorax, and abdomen black. Hind legs with the tibiæ fringed with yellow hairs near the base, the rest of the tibiæ

and first tarsal joint with orange hairs mixed with a few silvery scales; the distal tarsal joints black. Wings yellow hyaline, the

Fig. 129.—*Aschistophleps lampropoda*, ♂. 1/1.

veins, margins, and a broad discocellular streak to fore wing black; cilia black; inner margin of hind wing orange.

Hab. Margarita, Assam, May (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

382. **Aschistophleps melissoides**, n. sp.

♀. Abdomen apiform. Palpi white; head, thorax, and abdomen black; tibiæ and first tarsal joint of mid and hind legs clothed with black, grey, and white hairs. Wings hyaline, with the veins and margins black; fore wing with a black band occupying the middle third of the wing, and sending three spurs outwards along costa, vein 5, and inner margin.

An excellent mimic of the smaller Indian bee, *Apis indica*.

Hab. Eastern Pegu, 1000 feet, April (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

Genus **OLIGOPHLEBIA**.

Oligophlebia, *Hmpsn. Ill. Het.* ix, ined.

Type, *O. nigralba*, Hmpsn.

Range. Ceylon.

Antennæ minutely ciliated. Palpi upturned. Fore tibia with a terminal tuft of hair; mid legs with a small median and large terminal tuft to the tibia, the first two joints of the tarsus tufted; hind tibia with a very large terminal tuft. Fore wing with veins 5 and 7 absent. Hind wing with the discocellulars erect; veins 3 and 4 stalked.

Fig. 130.—*Oligophlebia nigralba*, ♂. 2/1.

383. **Oligophlebia nigralba**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 21.

♂. Head and thorax black; frons, genæ, palpi below, and pectus

silvery white. Legs black, the tibiæ and tarsi ringed with white. Fore wing black, with a hyaline patch on the disk crossed by veins 4 and 6, which are black. Hind wing hyaline, with the veins and margins narrowly black.

Hab. Ceylon. *Exp.* 15 millim.

Genus **MELITTIA.**

Melittia, *Walk. Cat.* viii, p. 66 (1856).

Type, *M. satyriniformis*, Hübn., from N. America.

Range. S. and W. Africa. The Oriental region to Celebes and Gilolo; Nearctic and Neotropical regions.

Antennæ with fascicles of cilia in the male, simple in the female; much dilated before the tip, which is pointed. Palpi erect and rather slender, the 2nd joint slightly hairy. Hind leg with the tibia and tarsus clothed with thick long hair down to the ungues, and used for steadying the insect in the air whilst feeding from flowers. Fore wing with shape and venation of *Sciapteron.* Hind wing with vein 3 given off before the end of the cell; vein 6 present. Anal tuft slight.

384. **Melittia astarte,** *Westw. Cab. Or. Ent.* p. 61, pl. 30, fig. 4; *C. & S.* no. 195.

Glossy brassy black. Antennæ ringed with lead-colour beyond the middle. Head, collar, and first and last segments of abdomen orange. Hind legs inwardly black; outwardly orange with a few white hairs. Fore wing brassy black, with no hyaline streaks. Hind wing hyaline, the veins orange; a black marginal line. Cilia of both wings orange.

Hab. Central India. *Exp.* 25 millim.

385. **Melittia pellecta,** *Swinh. Trans. Ent. Soc.* 1890, p. 169, pl. vi, fig. 2.

♀. Black; thorax fulvous, with a greenish tinge; abdomen with a few terminal grey scales to each segment. Hind legs black, with a few grey hairs. Fore wing black, with very slight hyaline streaks between some of the veins and irrorated with grey scales. Hind wing hyaline, with the veins and cilia black; a few silvery-blue scales on inner margin.

Hab. Rangoon. *Exp.* 38 millim.

386. **Melittia volatilis,** *Swinh. Trans. Ent. Soc.* 1890, p. 170, pl. vi, fig. 3.

♀. Differs from *pellecta* in the thorax being black; the fore wing with no grey scales. Hind wing with a large silvery-blue patch on inner margin. Hind legs with more grey hairs.

Hab. Rangoon. *Exp.* 24 millim.

387. **Melittia eurytion,** *Westw. Cab. Or. Ent.* p. 62, pl. 30, fig. 5; *C. & S.* no. 197.
Melittia strigipennis, *Walk. Cat.* xxxi, p. 17.

Differs from *volatilis* in the thorax being olive-green; the abdomen with more distinct silvery segmental bands. Fore wing with the hyaline streaks in, below, and beyond the cell considerably

Fig. 131.—*Melittia eurytion*, ♂. ½.

more extensive, those beyond being either three or four in number; some grey scales on the apical area. Hind legs clothed with black and chocolate-brown hairs, with a few grey hairs above and tufts below.

Hab. Japan; throughout N.E. India and Burma; Poona; Java; Gilolo. *Exp.* 24–30 millim.

388. **Melittia indica,** *Butl. A. M. N. H.* (4) xiv, p. 411; *C. & S.* no. 199.
Melittia staudingeri, *Boisd. Lép. Hét.* i, p. 478; *C. & S.* no. 203.

♂. Antennæ, head, thorax, and fore legs red-brown, darkest in Sikhim specimens; pectus yellow. Hind legs black, with a tuft of pale yellow hairs on the outside of the tibia. Abdomen black-brown, with narrow yellowish segmental bands; white below. Fore wing with five hyaline streaks between the nervules. Hind wing with pale greenish blue on inner margin.

Hab. Sikhim; Sylhet; Tenasserim. *Exp.* 32 millim.

389. **Melittia grandis,** n. sp.

♂. Thorax olive-green. Abdomen dark green, with yellow rings; pectus yellow, with lateral purplish patches; fore legs black, yellow, and orange. Hind legs with the femur and tibia clothed with black hairs, some yellow hairs on the inner side of the femur; the hairs on the outside of the tibia and all those clothing the tarsus fiery orange. Fore wing with no recurrent streak in the cell; the apical hyaline area large and embracing the fork of the subcostals. Hind wing with a few bluish scales on the inner margin; cilia of both wings brown.

Hab. Sikhim (*Möller*). *Exp.* 50 millim. Type in coll. Elwes.

390. **Melittia newara,** *Moore, Lep. Atk.* p. 10; *C. & S.* no. 201.

♂. Differs from *indica* in the thorax being bright golden yellow, the vertex slightly black. Fore wing with the apical

hyaline space larger, leaving a narrow marginal band. Hind wing with no blue on inner margin. Hind legs with a few red hairs from the joint of femur and tibia. Abdomen yellow below.
Hab. Sikhim. *Exp.* 35 millim.

391. **Melittia kuluana,** *Moore, P. Z. S.* 1888, p. 392; *Butl. Ill. Het.* vii, p. 98, pl. cxxxv, fig. 12; *C. & S.* no. 199 A.

♂. Differs from *indica* in the head, collar, thorax, and first two segments of abdomen being olive-brown; pectus and abdomen below yellowish white. Hind legs with a few fulvous hairs on the tibia and tarsus externally, as well as the yellow ones. Fore wing with the hyaline streaks between the nervules longer and leaving a small apical patch. Hind wing with no blue on inner margin.
Hab. Kulu. *Exp.* 30 millim.

392. **Melittia notabilis,** *Swinh. Trans. Ent. Soc.* 1890, p. 168, pl. vi, fig. 1.

♀. Head, thorax, and first three segments of abdomen fulvous above, the other segments black with narrow yellow segmental bands; abdomen yellow below; pectus yellow and white. Hind legs black, with some tufts of yellow hair on the outside of the tibia and first joint of tarsus; wings fulvous at base and inner margin; fore wing irrorated with brown scales; the hyaline streaks of the same extent as in *eurytion*; cilia of both wings brown.
Hab. Rangoon. *Exp.* 40 millim.

393. **Melittia gigantea,** *Moore, P. Z. S.* 1879, p. 413; *Waterhouse, Aid,* ii, pl. 131, fig. 4; *C. & S.* no. 198.

Differs from *notabilis* in the fore wing having the hyaline streaks between the nervules rather longer; the apical area powdered with grey scales; the costa ochreous; the recurrent black streak in the cell short. Hind legs with the tufts of hair externally fulvous, internally yellow on the tibia, black on the tarsus.
Hab. Mussooree. *Exp.* 44 millim.

394. **Melittia chalciformis,** *Fabr. Ent. Syst.* iii, pt. 1, p. 382.
Melittia bombyliformis, *Cram. Pap. Exot.* iv, p. 241, pl. 400 C; *C. & S.* no. 196.
Melittia phorcus, *Westw. Cab. Or. Ent.* p. 62; *C. & S.* no. 202.

Head brown; thorax fulvous with the vertex brown; the first two segments of abdomen fulvous; the other segments black with narrow yellow segmental bands; yellowish white below; palpi and pectus yellow and white. Hind legs black; the tibiæ and tarsi tufted externally with yellow and fulvous hairs. Wings slightly

fulvous at base ; fore wings irrorated with brown and grey scales ; the hyaline streaks as in *eurytion* ; cilia of both wings brown.

Hab. Ceylon ; Central India ; Bombay ; Ganjam ; Moulmein ; Sylhet ; Tenasserim ; Java. *Exp.*, ♂ 32, ♀ 34–36 millim.

395. **Melittia nepcha**, *Moore, Lep. Atk.* p. 10 ; *C. & S.* no. 200.
Melittia dorsatiformis, *Hmpsn. Ill. Het.* viii, p. 43, pl. cxxxix, fig. 21.
Melittia congruens, *Swinh. Trans. Ent. Soc.* 1890, p. 169, pl. vi, fig. 4.

Differs from *chalciformis* in having the collar blue-black ; mid tibia with blue bands ; hind legs with white hairs replacing the yellow ones, with a few blue scales at joint of femur and tibia. Fore wing with the hyaline streaks in and below the cell broader ; the apical hyaline area typically large and having a narrow black margin ; in the Pegu and Perak specimens it only just embraces the fork of the subcostals, whilst in the Rangoon specimen, *congruens*, it does not include the fork at all.

Hab. Sikhim ; Nilgiris ; Rangoon ; Pegu ; Tenasserim ; Perak. *Exp.* 28–32 millim.

Genus LENYRA.

Lenyra, *Walk. Cat.* viii, p. 71 (1856).

Type, *L. astaroth*, Westw.

Range. Sikhim ; Assam ; Sylhet.

♂. Head comparatively small, palpi slight and porrect ; antennæ simple, thickened distally into a pronounced club. Thorax and abdomen covered with small closely appressed scales. Fore and mid pairs of legs without long hairs. Hind legs clothed with thick tufts of hair of irregular length. Fore wing with the apex much rounded ; vein 2 given off some way before the end of the cell ; 9 stalked with 7 and 8.

396. **Lenyra astaroth**, *Westw. Cab. Or. Ent.* p. 14, pl. vi, fig. 5 ; *C. & S.* no. 204.

♂. Entirely black, shot with brilliant metallic iridescent

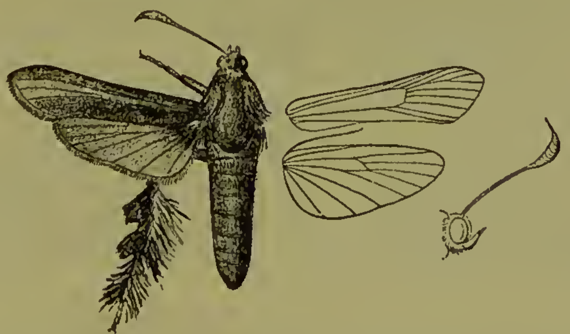

Fig. 132.—*Lenyra astaroth*, ♂. 1/1.

colours. Hind leg in Sikhim specimens clothed entirely with

deep blue-black hairs, some of them on the outside of tibia being tipped with white; whilst in the Sylhet specimen the hair on the inside of the tibia is fuscous black.

Hab. Sikhim; Assam; Sylhet. *Exp.* 46–51 millim.

The following species formerly recorded as Indian are omitted.

Thyris asiliformis, Fabr., C. & S. no. 205, is probably a W. Indian *Zygænid.*

Sura chalybea, Butl., C. & S. no. 209, is from Singapore.

Family TINÆGERIIDÆ *.

Small day-flying moths, mostly with brilliant colours; the antennæ thickly fringed with long scales along the whole or part of their length; palpi long, slender, and sickle-shaped. Wings long, narrow, and pointed; fore wing with vein 1 *b* slightly forked or simple at the base, veins 7 and 8 stalked; hind wing more or less hyaline, three internal veins, vein 8 free from the root. Legs often clothed with long scales above or on the spurs, which are long.

Larvæ (of known species) feeding in webs.

Key to the Genera.

a. Antennæ fringed along whole upperside; fore wing with vein 2 from end of cell.... 1. SNELLENIA, p. 206.
b. Antennæ only fringed on median joints; fore wing with vein 2 from before end of cell.
  a'. Fore wing with vein 6 present; hind tibiæ with the spurs tufted .... 2. ŒDEMATOPODA, [p. 207.
  b'. Fore wing with vein 6 absent; hind tibiæ with the spurs not tufted .... 3. ERETMOCERA, p. 208.

Genus SNELLENIA.

Snellenia, *Wlsm. Trans. Ent. Soc.* 1889, p. 13.

Type, *S. coccinea*, Wlsm.

Range. Japan; Sikhim; Australia.

Antennæ thickly fringed on the upperside. Palpi erect and slender. Fore wings with vein 1 *b* forked at the base, 7 and 8 stalked. Hing wing with vein 1 *a* short, 1 *b* furcate at base, 3 and 4 stalked; the end of cell square. Legs slightly tufted at base of spurs.

* This family is shown by Lord Walsingham, in his Monograph, Trans. Ent. Soc. 1889, to be allied to *Tinthia* in the *Sesiidæ* on the one hand, and on the other to the subfamilies of *Tineidæ*, the *Gelechiinæ*, *Dasycerinæ*, and *Butalinæ*.

397. **Snellenia coccinea**, *Wlsm. Trans. Ent. Soc.* 1889, p. 15, pl. ii.

♂. Head, thorax, and abdomen black. Fore wing scarlet, with small black spots at the base of costa and inner margin; a bluish-

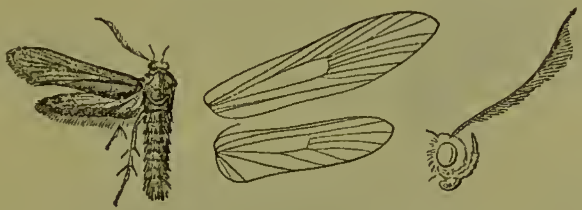

Fig. 133.—*Snellenia coccinea*, ♂. $\frac{2}{1}$.
(From Walsingham, Trans. Ent. Soc. 1889, pl. ii.)

black metallic spot at end of cell. Hind wing black; the costal area to beyond the middle rosy pink. Cilia of both wings black. Underside with the outer area of both wings suffused with fuscous.

Hab. Sikhim, 5000 feet. *Exp.* 15 millim.

398. **Snellenia tarsella**, *Wlsm. Trans. Ent. Soc.* 1889, p. 15, pl. vi, fig. 3.

♀. Differs from *coccinea* in the thorax being scarlet, the fore wing scarlet with the veins marked with black lines; the inner area blackish. Hind wing rather paler than the fore wing, the outer area broadly blackish. Tarsi white-ringed.

Hab. Sikhim. *Exp.* 28 millim.

Genus **ŒDEMATOPODA.**

Œdematopoda, *Zell. Vet. Ak. Handl.* 1852, p. 96 (1854).
Atkinsonia, *Stainton, Trans. Ent. Soc.* v, p. 125 (1859).

Type, *Œ. princeps*, Z., from Natal.

Range. Japan; India; Natal.

Antennæ with the median segments fringed with scales; palpi very long and slender. Wings pointed; fore wing with vein 1 forked at the base, 2 given off before the end of cell; hind wing with vein 1 *a* short, the lower angle of cell rounded. Legs, especially the hind legs, with the spurs tufted.

399. **Œdematopoda clerodendronella**, *Staint. Trans. Ent. Soc.* v, p. 125; *Wlsm. Trans. Ent. Soc.* 1889, p. 21, pl. vi, fig. 7; *C. & S.* no. 4940.

Head and frons purple; palpi with the second joint orange, the third purple. Antennæ purple-black. Fore wing brilliant coppery red. Hind wing reddish orange; the cilia of both wings greyish.

Thorax coppery red; abdomen blue-black, with a narrow white medial band. Legs black with white spots.

Fig. 134.—*Œdematopoda clerodendronella*, ♂. $\frac{2}{1}$.
(From Walsingham, Trans. Ent. Soc. 1889, pls. iv. & vi.)

Larva dirty brown; the head reddish brown; the first somite black. Feeds on *Clerodendron*, drawing together the tops with a web.

Hab. Calcutta. *Exp.* 13–14 millim.

Genus **ERETMOCERA.**

Eretmocera, *Zell. Vet. Ak. Handl.* 1852, p. 96 (1854).
Staintonia, *Stgr. Stettin. ent. Zeit.* xx, p. 250 (1859).
Exodomorpha, *Wlk. Cat.* xxix, p. 833 (1864).
Castorura, *Meyr. Proc. Linn. Soc. N. S. W.* ser. 2, i, p. 1047 (1887).

Type, *E. fuscipennis*, Zell., from S. Africa.

Range. Africa; India; Australia.

Antennæ as in *Œdematopoda*; the third joint of palpi not quite so long. The upper angle of cell of both wings produced; fore wing with vein 1 *b* not forked, 6 absent; hind wing with vein 1 *b* not forked. Legs without tufts of scales.

400. **Eretmocera impactella,** *Wlk. Cat.* xxix, p. 637; *Wlsm. Trans. Ent. Soc.* 1889, p. 34, pl. vi, fig. 18; *C. & S.* no. 4939.

Head and thorax cupreous; collar, tegulæ, metathorax, and abdomen yellow, the latter with the second, third, and terminal

Fig. 135.—*Eretmocera impactella*, ♂. $\frac{2}{1}$.
(From Walsingham, Trans. Ent. Soc. 1889, pls. v. & vi.)

segments cupreous. Fore wing cupreous, with four yellow spots. Hind wing paler.

Hab. N.E. India. *Exp.* 15 millim.

Family SYNTOMIDÆ.

Small or medium-sized moths of semi-diurnal habit; the palpi small and porrect. Antennæ simple, ciliated, or pectinated, with

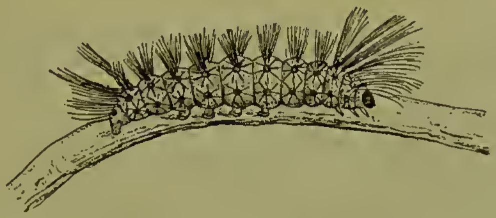

Fig. 136.—Larva of *Euchromia polymena.* $\frac{1}{1}$. (From Moore, Lep. Ceyl. ii, pl. 94, fig. 6 *a.*)

short dilated branches; spurs on tibiæ always short or wanting. Fore wing with vein 1 *b* forked at the base, 1 *c* absent. Hind wing with vein 8 obsolete, its position indicated by a slight fold.

Larva: short and cylindrical, with thick, close, or sparse tufts of hair.

Cocoon silken and closely woven.

Key to the Genera.

a. Hind wing with vein 6 wanting; vein 2 present.
  a'. Hind wing with vein 5 absent.
    a^2. Abdomen with the distal segments not dilated and hairy; fore wing with vein 7 present.
      a^3. Fore wing with vein 3 from before end of cell; 4 and 5 not stalked.
        a^4. Hind wing with vein 3 wanting .. 1. SYNTOMOIDES, [p. 209.
        b^4. Hind wing with vein 3 present.
          a^5. Hind tibia with two pairs of spurs. 2. SYNTOMIS, p. 212.
          b^5. Hind tibia with one pair of spurs; fore wing broader and more rounded...................... 3. CALLITOMIS, p. 224.
      b^3. Fore wing with vein 3 from end of cell; 4 and 5 stalked.................. 4. TRICHÆTA, p. 225.
    b^2. Abdomen with the distal segments dilated and hairy; fore wing with vein 7 absent. 5. PSICHOTOË, p. 225.
  b'. Hind wing with vein 5 present .... 6. NACLIA, p. 226.
b. Hind wing with vein 6 present, vein 2 absent . 7. EUCHROMIA, p. 226.

Genus **SYNTOMOIDES**, nov.

Type, *S. imaon*, Cram.

Range. Throughout India, Ceylon, and Burma to Malacca and Sumatra.

Mid tibiæ with one pair of minute spurs, hind tibiæ with two pairs. Fore wing with vein 3 from before end of cell, 4 and 5 from the end. Hind wing with vein 3 absent.

SECT. I. Antennæ almost simple in both sexes.

A. *Abdomen with two bands.*

401. **Syntomoides imaon**, *Cram. Pap. Exot.* iii, p. 94, pl. 248 E; *C. & S.* no. 245.
Syntomis approximata, *Wlk. Cat.* xxxi, p. 79.
Syntomis fusiformis, *Wlk. Cat.* vii, p. 1595.
Syntomis sargania, *Butl. Trans. Ent. Soc.* 1879, p. 4; *C. & S.* no. 259.
Syntomis cupreipennis, *Butl. Journ. Linn. Soc., Zool.* xii, p. 347; *C. & S.* no. 229.
Syntomis mota, *Swinh. Trans. Ent. Soc.* 1891, p. 134.

Frons and collar yellow; metathorax with a yellow streak; abdomen with the first yellow band sometimes obsolescent. Fore wing with the hyaline patches large, one filling the cell, another nearly the whole interno-median interspace, one at junction of veins 2 and 3, two subapical and two submarginal; in some specimens there is a long streak between veins 5 and 6, which is the form named *S. sargania*, in others it is reduced to a spot, and in others entirely wanting. Hind wing with a subbasal hyaline patch extending hardly, or not at all, beyond the cell. Tips of antennæ and proximal joints of tarsi white. The spots of the fore wing vary considerably in size.

Fig. 137.—*Syntomoides imaon*, ♂. ½.

Hab. Sikhim; Khási Hills; and throughout the plains of India, Ceylon, and Burma; Sumatra. *Exp.* 34 millim.

402. **Syntomoides godartii**, *Boisd. Mon. Zyg.* p. 115, pl. 7, fig. 3; *C. & S.* no. 241.
Syntomis fytchei, *Moore, P. Z. S.* 1871, p. 246; *C. & S.* no. 239.
Syntomis artina, *Butl. Journ. Linn. Soc., Zool.* xii, p. 347; *C. & S.* no. 221.

Similar to *imaon*, except that the frons is yellowish or dirty white. Fore wing with the spot between veins 5 and 6 never present. Hind wing hyaline, with narrow black margins.

Hab. Sikhim; Khásis; Nágas; Manipur; Yunnan; Bengal; Ceylon; Coromandel; Malacca. *Exp.* 32 millim.

403. **Syntomoides hydatina**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 346; *C. & S.* no. 244.

♀. Differs from *imaon* in the markings of the fore wing being

reduced to two widely-separated spots in the interno-median interspace, a small subapical and two small submarginal spots.

The last two may possibly be varieties of *imaon*.

Hab. Calcutta; Central India. *Exp.* 24 millim.

B. *Abdomen with five yellow bands.*

404. **Syntomoides hyalina,** *Moore, Lep. Atk.* p. 13; *C. & S.* no. 243.

♀. Frons white; antennæ black with white tips; collar and thorax black; abdomen with the distal segments steel-blue. Fore wing hyaline, with the veins black; the margins narrowly black, widest at apex and centre of inner margin. Hind wing hyaline, with costa and outer margin broadly black, the latter dentate near vein 2; inner margin orange. Tarsi black.

Hab. Sikhim; Nága Hills. *Exp.* 40 millim.

405. **Syntomoides volans,** *Swinh. Trans. Ent. Soc.* 1890, p. 173, pl. vi, fig. 6.

♀. Differs from *hyalina* in the frons being grey-brown and the tips of antennæ not white.

Hab. Karen Hills. *Exp.* 30 millim.

Sect. II. Antennæ bipectinated in male, the branches short and dilated distally, serrated in female.

A. *Abdomen with two yellow bands in male, one in female.*

406. **Syntomoides incipiens,** *Wlk. Cat.* xxxi, p. 68; *C. & S.* no. 266.

♂. Black; the frons, collar, and tegulæ yellow. Fore wing with a subbasal, two medial, one subapical, and two submarginal hyaline spots. Hind wing with a subbasal joined to a submarginal spot. Tarsi black.

♀ with the end of abdomen dilated and with a tuft of ochreous hairs.

Hab. S. India and Kanthalla, Ceylon. *Exp.* 17 millim.

B. *Abdomen with one basal yellow band in both sexes.*

407. **Syntomoides brachypecten,** *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 23.

♂. Differs from *incipiens* in having the collar and tegulæ black.

Hab. Anuradhapura, Ceylon. *Exp.* 14 millim.

C. *Each segment of abdomen fringed with yellow.*

408. **Syntomoides microchilus**, n. sp.

Head, thorax, and abdomen brown; collar, tegulæ, and metathorax yellow; each segment of abdomen fringed with yellow. Frons yellow; legs brown; antennæ white at tips. Fore wing hyaline; a narrow, discocellular, brown band; margins narrowly brown; the outer marginal band widest from apex to vein 5 and between veins 2 and 3. Hind wing hyaline, with narrow brown margins.

Hab. Tenasserim Valley (*Doherty*). *Exp.* 20 millim. Type in coll. Druce.

Genus SYNTOMIS.

Syntomis, *Ochs. Eur. Schmett.* ii. p. 103 (1808).
Hydrusa, *Wlk. Cat.* i. p. 255 (1854).
Eressa, *Wlk. Cat.* i. p. 149 (1854).
Trianeura, *Butl. Journ. Linn. Soc., Zool.* xii, p. 353 (1876).

Type, *S. phegea*, Cram., from Europe.

Range. Europe; the whole of Africa and Asia; Borneo; Sumatra; Java; Australia.

Differs from *Syntomoides* in having vein 3 of the hind wing present.

Larva thickly covered with hair; the cocoon hairy.

Sect. I. Antennæ almost simple in both sexes.

A. *With one yellow band to abdomen on sixth segment.*

409. **Syntomis unifascia**, n. sp.

♀. Frons white. Black shot with blue. Wings with the spots small. Fore wing with one subbasal, two medial, one subapical, and two submarginal hyaline spots. Hind wing with one subapical spot; tarsi black.

Hab. Sikhim. *Exp.* 34 millim. Type in B. M.

B. *Abdomen with two yellow bands.*

1. *The frons yellow.*

410. **Syntomis atkinsoni**, *Moore, P. Z. S.* 1871, p. 245, pl. 18, fig. 2; *C. & S.* no. 223.

Collar black; a yellow patch on metathorax. Fore wing with one subbasal, two medial, two subapical, and two submarginal hyaline spots. Hind wing with a large basal hyaline spot; the inner margin yellow. Tips of antennæ and first tarsal joints white.

Hab. Sikhim; Cachar; Yunnan; Burma; Tenasserim. *Exp.* 30 millim.

411. **Syntomis bicincta**, *Koll. Hügel's Kaschmir*, iv, p. 460, pl. 19, fig. 8; *C. & S.* no. 226.

Collar black. Fore wing as in *atkinsoni*, except in having but one subapical spot. Hind wing with a subapical spot as well as subbasal. The spots of both wings are somewhat variable in size.

Hab. Kulu; Kangra; Sikhim; Khási Hills. *Exp.*, ♂ 30, ♀ 40 millim.

412. **Syntomis cyssea**, *Cram. Pap. Exot.* iv, p. 124, pl. 355 B; *C. & S.* no. 230.

Syntomis schœnerrhi, *Boisd. Mon. Zyg.* p. 112, pl. 7, fig. 1.

Fig. 138.
Syntomis cyssea, ♂. $\frac{1}{1}$.

Collar yellow. The spots of both wings usually smaller than in *bicincta*, and often yellowish and with an extra spot between the two medial ones of fore wing. In some specimens there is a small patch of white cilia near the apex of fore wing.

Hab. Himalayas, from Kangra to Sikhim; Continental India and Ceylon. *Exp.* ♀ 32 millim.

413. **Syntomis minor**, *Warren, P. Z. S.* 1888, p. 294; *C. & S.* no. 252 A.

♂. Wings with the hyaline spots very small. Fore wing with one subbasal, two medial, one subapical, and two submarginal spots. Hind wing with subbasal and subapical spots.

Hab. Punjab. *Exp.* 20 millim.

414. **Syntomis insueta**, *Swinh. Cat. Het. Mus. Oxon.* p. 41.

♀. Wings shot with copper. Fore wing with only two hyaline spots, one in the cell, one in interno-median interspace. Hind wing with a subbasal spot.

Hab. Barrackpore. *Exp.* 32 millim.

2. *The frons black.*

415. **Syntomis georgina**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 345; *C. & S.* no. 240.

Syntomis cysseoides, *Butl. Journ. Linn. Soc., Zool.* xii, p. 346; *Moore, Lep. Ceyl.* ii, p. 35, pl. 95, fig. 1; *C. & S.* no. 231.

Similar to *cyssea* except for the black frons. The spots vary considerably in size.

Hab. N.W. Himalayas; Continental India and Ceylon. *Exp.* 22–32 millim.

416. **Syntomis albapex**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 1.

♂. Fore wing with only two hyaline spots, one in interno-median interspace, one between veins 3 and 4; cilia conspicuously white below the apex. Hind wing with the two hyaline spots small.

Hab. Ceylon. *Exp.* 34 millim.

417. **Syntomis gelatina**, *Hmpsn. Ill. Het.* viii, p. 43, pl. 139, fig. 1.

♀. Fore wing with a hyaline patch filling the cell, another the interno-median interspace; two large subapical, and three sub-marginal spots. Hind wing hyaline, with black margins; a black streak running up vein 2.

This species has the greater part of the wings yellowish hyaline, the veins black.

Hab. Nilgiris, 6000 feet. *Exp.* 26 millim.

C. *Abdomen with two yellow bands and lateral spots on the intermediate segments.*

418. **Syntomis extensa**, *Wlk. Cat.* xxxv, p. 1863; *C. & S.* no. 237; *Hmpsn. Ill. Het.* viii, pl. 143, fig. 14.

Frons and collar brown. Wings brown; the fore wing much elongated with an oblique series of hyaline spots, one subbasal below median nervure, one filling the end of cell, sometimes with a small one below it, and two beyond the cell (in the Bombay specimen only one). Hind wing with a subbasal spot. Antennæ tipped with white; tarsi not white.

Hab. Nilgiris, 6000–7000 feet; Bombay; Matheran; Mahableshwar. *Exp.* 42–50 millim.

419. **Syntomis lucina**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 345; *C. & S.* no. 250.

Frons yellow. Antennæ tipped with white; first joint of tarsi white. Only differs from *bicincta* in the yellow lateral spots to abdomen; in the Sikhim specimen the lateral pair of spots is expanded into a complete band on the segment next the second abdominal band.

Hab. Sikhim; Nepal. *Exp.* 34 millim.

420. **Syntomis khasiana**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 345; *C. & S.* no. 246.

Differs from *lucina* in the tegulæ being yellow; the end of the abdomen bluish; the hyaline spots of wings not yellowish.

Hab. Khási Hills. *Exp.*, ♂ 30, ♀ 36 millim.

D. *Abdomen with four yellow bands; the second and last three segments being without bands.*

The frons yellow.

421. **Syntomis flavifrons**, n. sp.

♂. Collar and tegulæ yellow. Wings marked as in *bicincta*, but for the lower medial spot of the fore wing being larger and squarer. Tips of antennæ and first joint of tarsi white.

Hab. Momeit, Burma, 2000 feet, June (*Doherty*). *Exp.* 34 millim. Type in coll. Elwes.

422. **Syntomis quadrifascia**, n. sp.

♀. Collar and thorax black. Fore wing with the hyaline spots very large—one filling the whole cell, another almost the whole interno-median interspace; one long subapical streak, and two submarginal ones. Hind wing hyaline, with the veins and margins black; a black streak running up vein 2. Tarsi black.

Hab. Bernardmyo, Burma, 6000 feet, May (*Doherty*). *Exp.* 38 millim. Type in coll. Elwes.

E. *Abdomen with six yellow bands; the last two segments without bands.*

1. *The frons white.*

423. **Syntomis divisa**, *Wlk. Cat.* i, p. 131; *C. & S.* no. 236; *Butl. Ill. Het.* i, p. 16, pl. 6, fig. 14.
Syntomis disrupta, *Moore, P. Z. S.* 1878, p. 845, pl. 53, fig. 5; *C. & S.* no. 235.

Frons and genæ white; tegulæ yellow; yellow lateral spots on meso- and metathorax. Fore wing with the hyaline patch in the interno-median interspace broken up into two, sometimes three, spots; one or two subapical and three marginal spots. Hind wing with a large subbasal patch and a subapical one traversed by vein 3: this patch being sometimes small, sometimes large, and joined to the subbasal patch. Proximal joints of tarsi white; abdomen steel-blue.

The hyaline spots vary much in extent: in Sikhim specimens they are smallest, one having only one subapical spot to the fore wing; in examples from Sylhet they are larger; largest in Burmese specimens, this last being the form named *S. disrupta*, Moore.

Hab. Sikhim; Khásis; Sylhet; Burma. *Exp.* 36–40 millim.

424. **Syntomis masoni**, *Moore, P. Z. S.* 1878, p. 845, pl. 53, fig. 4; *C. & S.* no. 251.

Differs from *divisa* in having the collar yellow; the interno-

median hyaline patch of fore wing entire; the black border of hind wing not dentate at vein 2.

Hab. Upper Tenasserim. *Exp.* 50 millim.

425. **Syntomis diaphana**, *Koll. Hügel's Kaschmir*, iv, p. 460, pl. 19, fig. 7.

Syntomis œnone, *Butl. Journ. Linn. Soc., Zool.* xii, p. 344; *C. & S.* no. 256.

Collar, tegulæ, and metathorax yellow. Fore wing with the interno-median hyaline patch unbroken; two subapical streaks, one between veins 5 and 6; and three submarginal streaks. Hind wing with a large hyaline patch crossed by veins 1, 2, and 3; the margins black.

Hab. Almorah; Mussooree; Kashmir; Sibságar; Burma. *Exp.* 48 millim.

426. **Syntomis melæna**, *Wlk. Cat.* i, p. 133; *C. & S.* no. 252; *Butl. Ill. Het.* i, p. 17, pl. 6, fig. 10.

Two yellow streaks on vertex of thorax; the first four abdominal bands white; otherwise similar to *diaphana*.

Hab. ? Simla; Nepal; Sikhim; Khásis; Assam; Shillong; Burma. *Exp.*, ♂ 50, ♀ 58 millim.

427. **Syntomis albifrons**, *Moore, P. Z. S.* 1878, p. 845, pl. 53, fig. 6; *C. & S.* no. 218.

♀. Tegulæ and streaks on vertex of thorax white; bands on metathorax and abdomen yellow; the first four abdominal bands narrow. Wings shot with purple. Fore wing with the hyaline patch in interno-median interspace not extending to near outer margin; only a small spot between veins 2 and 3, and the subapical and submarginal spots smaller than in *diaphana* and *melæna*.

Hab. Momeit, Burma; Tenasserim. *Exp.* 60 millim.

2. *The frons yellow.*

428. **Syntomis discinota**, *Moore, Lep. Atk.* p. 13; *C. & S.* no. 234.

♂. Frons pale yellow; collar, tegulæ, meso- and metathorax spotted with yellow; abdomen with the bands incomplete on the vertex; the black parts shot with green; wings yellowish hyaline; the veins and margins narrowly black; the outer black margin dentated at vein 2 of both wings. First joint of tarsi white.

In this species veins 5 and 6 of the fore wing are very close together, as also in *sladeni*, *divisa*, and others; but as, in closely allied species, there is every gradation between the extremes of separation and approximation, this point is of no use in classifica-

tion; and in the same way the closeness with which vein 4 of the hind wing approaches the costa differs in allied forms.

Hab. Khási Hills; Tenasserim. *Exp.* 40 millim.

429. **Syntomis fervida**, *Wlk. Cat.* i, p. 131; *C. & S.* no. 238; *Butl. Ill. Het.* i, p. 18, pl. 6, fig. 16.

♀. Frons orange; the yellow markings on thorax and abdomen larger and brighter, the latter being nearly complete on the vertex. Wings with the base and inner margin orange; the hyaline parts darker yellow than in *discinota*; veins 5 and 6 of fore wing not so close together, and in some specimens with a black mark between them at their bases. First joint of tarsi white.

Hab. Eastern Pegu; Moulmein. *Exp.* 36–44 millim.

430. **Syntomis newara**, *Moore, Lep. Atk.* p. 12; *C. & S.* no. 254.

♀. Bands of abdomen quite complete on vertex. Wings as in *fervida*, but not marked with orange at the base and inner margin. Fore wing with veins 5 and 6 far apart; a black band on the discocellulars; the black margin uneven, and running inwards at veins 2 and 3, and 5 and 6. Hind wing with the black margin very narrow. Legs almost entirely yellow; tarsi not white.

Hab. Bhutan; Sikhim. *Exp.* 44 millim.

F. *Abdomen with a yellow band on each segment.*

1. *The tip of abdomen yellow.*

a. *Frons brown.*

*431. **Syntomis lepcha**, *Moore, Lep. Atk.* p. 12; *C. & S.* no. 248.

Collar and four thoracic stripes yellow; abdominal bands narrow; tip reddish. Wings yellowish hyaline; veins and cilia black. Fore wing with an elongated black hexagonal streak at the end of cell and short apical marginal band dilated and ending at vein 6. Hind wing with marginal black band decreasing from apex. Tarsi not white.

Hab. Sikhim. *Exp.* 25 millim.

b. *The frons yellow.*

432. **Syntomis sladeni**, *Moore, P. Z. S.* 1871, p. 245, pl. 18, fig. 5; *C. & S.* no. 261.

Collar, tegulæ, meso- and metathorax yellow. Wings as in *discinota*. Tarsi white.

Hab. Yunnan; Bernardmyo, Burma; E. Pegu. *Exp.* 36 millim.

433. **Syntomis grotei**, *Moore, P. Z. S.* 1871, p. 245, pl. 18, fig. 4; *C. & S.* no. 242.

♂. Similar to *sladeni*, but fore wing with a black band across the interno-median hyaline space; the spot between veins 2 and 3 not approaching the outer margin, and no streak between veins 5 and 6.

Hab. Yunnan; Upper Tenasserim. *Exp.* 36 millim.

434. **Syntomis vitrea**, *Wlk. Cat.* vii, p. 1594; *C. & S.* no. 270.
Syntomis austeni, *Moore, P. Z. S.* 1879, p. 389; *C. & S.* no. 224.

♀. Differs from *sladeni* in veins 2 and 3 of fore wing arising and running close together for their whole length, and the interspace between 5 and 6 being wholly filled in by black; the hyaline parts of both wings yellowish.

S. davidi, Pouj., from Tibet, only differs from this species in veins 2 and 3 of fore wing not arising close together.

Hab. N.E. Bengal; Sylhet. *Exp.* 40 millim.

435. **Syntomis submarginalis**, *Wlk. Char. undescr. Het.* p. 89; *C. & S.* no. 262.

Similar to *grotei*, except that the fore wing has yellow streaks along the costa and inner margin, and both wings have yellow marks beyond the submarginal hyaline spots; these yellow marks are much more extensive in Sikhim specimens than in the Burmese one.

Hab. Sikhim, 4000 feet; Bernardmyo, Burma, 6000 feet. *Exp.* 36 millim.

436. **Syntomis tigrina**, *Wlk. Cat.* xxxi. p. 71.

♂. Fore wing elongated. Hind wing with the inner margin expanded into a large lobe. Wings entirely yellow, with the cilia of both wings and veins of fore wing black. Marks on head, thorax, and abdomen as in preceding species.

Hab. Burma; Cambodia. *Exp.* 36 millim.

437. **Syntomis chlorocera**, n. sp.

♂. Antennæ wholly yellow and thickly scaled above. Fore wing with no subbasal spot, two large medial spots, one small subapical and a double submarginal spot. Hind wing with the subbasal joined to the subapical spot and tinged with yellow. Tibiæ and tarsi banded with yellow.

Hab. Nága Hills. *Exp.* 20 millim. Type in coll. Elwes.

2. *Abdomen with the tip black.*

a. *The frons yellow.*

438. **Syntomis luteifascia**, n. sp.

♂. Collar orange; orange spots on meso-, meta-, and vertex of

thorax; abdomen with broad orange bands. The hyaline spots of both wings large, one filling the cell, one subbasal in the internomedian interspace, two subapical and four submarginal; the one between veins 5 and 6 minute and near the outer margin. Hind wing with some orange on inner margin; the subbasal and subapical hyaline spots connected togther.

Hab. Nága Hills. *Exp.* 32–36 millim. Type in coll. Elwes.

439. **Syntomis berinda,** *Moore, P. Z. S.* 1878, p. 845, pl. 53, fig. 8; *C. & S.* no. 225.

♂. Collar, tegulæ, and metathorax spotted with orange; abdomen with narrow orange bands. Fore wing with five hyaline spots—one subbasal, two medial, one subapical, and a double submarginal one. Hind wing with a large hyaline yellow-tinged spot occupying the greater part of the wing.

Hab. Upper Tenasserim. *Exp.* 30 millim.

440. **Syntomis huebneri,** *Boisd. Mon. Zyg.* p. 127, pl. 8, fig. 4; *C. & S.* no. 296.

Syntomis marsdeni, *Moore, Lep. E. I. Co.* ii, p. 323.
Syntomis xanthomela, *Wlk. Journ. Linn. Soc.* iii, p. 184.
Syntomis contermina, *Wlk. Cat.* xxxi, p. 78.

Collar, tegulæ, and metathorax orange; abdominal orange bands broad. Fore wing with one subbasal, two medial, one or two subapical, and two submarginal hyaline spots. Hind wing with a large basal hyaline patch tinged with yellow towards inner margin, and two minute subapical spots.

Hab. Bombay; Singapore; Java; C. York. *Exp.* 22 millim.

441. **Syntomis wimberleyi,** *Swinh. P. Z. S.* 1889, p. 400, pl. 43, fig. 1.

♀. Collar, tegulæ, and metathorax yellow; abdominal yellow bands rather narrow. Wings marked as in *berinda*, but yellow not hyaline.

Hab. Andamans. *Exp.* 28 millim.

b. *The frons dark.*

442. **Syntomis passalis,** *Fabr. Sp. Ins.* ii, p. 159; *C. & S.* no. 257.

Syntomis creusa, *Cram. Pap. Exot.* iii, p. 94, pl. 248 F; *Boisd. Mon. Zyg.* p. 121, pl. 7, fig. 7.
Syntomis montana, *Butl. Journ. Linn. Soc., Zool.* xii, p. 349; *C. & S.* no. 253.

Some traces of orange-red on vertex of thorax; bands of abdomen orange-red and rather narrow. Wings black, shot with purple. Fore wing with some orange-red at base and along inner margin; the hyaline spots small, one subbasal, two medial, one subapical, and two submarginal. Hind wing with one small submarginal spot.

The form *montana* has all the spots rather larger, the two in the interno-median interspace of the fore wing being almost joined.

Hab. Assam and throughout Continental India and Ceylon. *Exp.* 40 millim.

443. **Syntomis formosæ**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 346.
Syntomis emma, *Butl. Journ. Linn. Soc., Zool.* xii, p. 350.

Collar yellow; thorax black; abdominal yellow rings narrow. Fore wing with one subbasal, two medial, one or two subapical, and a double submarginal rather small hyaline spot. Hind wing with the large subbasal joined to the subapical spot.

Hab. China; Formosa; Margarita, Assam; E. Pegu, 2000 feet. *Exp.*, ♂ 26, ♀ 28 millim.

444. **Syntomis eressoides**, n. sp.

♀. Collar yellow; thorax black; abdomen with the yellow bands rather narrow. Fore wing hyaline, with a black discocellular band; veins and margins black; outer black margin broad from apex to vein 5, and dentate at vein 2. Hind wing hyaline, with the veins and margins black; apex broadly black.

Hab. Momeit, Burma. *Exp.* 28 millim. Type in coll. Elwes.

c. *The frons white.*

445. **Syntomis cherra**, *Moore, Lep. Atk.* p. 12; *C. & S.* no. 228.

♂. Brownish black, pro- and metathorax with an orange spot on each; abdomen with an orange band on each segment. Fore wing with a long hyaline streak in the cell; another below it; two subapical and two submarginal streaks. Hind wing hyaline, with the apex and outer margin dark.

Hab. Khási Hills. *Exp.* 36 millim.

SECT. II. (*Hydrusa*). Antennæ serrated in male, and simple in female.

446. **Syntomis multigutta**, *Wlk. Cat.* i, p. 134; *C. & S.* no. 268; *Butl. Ill. Het.* i, pl. 7, fig. 3.

Head, vertex of thorax, and spots on vertex and sides of abdomen blue-black in male, black in female; collar, tegulæ, and abdomen scarlet. Wings yellow hyaline; the veins and margins black.

In some specimens the black on apex of fore wing and outer margin of hind wing is broad, and every gradation to a narrow, even, marginal band to both wings is found.

Hab. Nepal; Sikhim; Tibet; Burma. *Exp.*, ♂ ♀, 25–26 millim.

447. **Syntomis blanchardi,** *Pouj. Bull. Soc. Ent. Fr.* 1884, p. cxxxvi.

♂. Differs from *multigutta* in the thorax having paired pale streaks on each side of the vertex; the ground-colour of abdomen pale, crimson towards the apex below. Wings with the hyaline parts not yellowish. Fore wing with the outer margin excurved from veins 2 to 5; a broad black band on the discocellulars; the apical black band extending down to vein 4, and sending a tooth inwards along vein 5. Hind wing with the apical band rather narrow and extending only to vein 2.

Hab. China; Sikhim. *Exp.* 24 millim.

448. **Syntomis nigra,** n. sp.

♂. Head, thorax, and abdomen black; collar and abdominal segments slightly fringed with yellow; two slight yellow streaks on metathorax. Fore wing hyaline; the veins and margins narrowly black; a broad black band on discocellulars; the interspace between veins 5 and 6 black; a black marginal patch from the apex to vein 4. Hind wing hyaline; the veins and margins narrowly black; a large black apical patch.

Hab. Simla (*Harford*). *Exp.* 25 millim. Type in B. M.

449. **Syntomis serrata,** n. sp.

Antennæ with distal part white above; frons, tegulæ, and metathorax yellow; abdomen greenish black, with yellow bands on the first six segments. Wings hyaline, with the veins and margins black. Veins 3 and 4 of hind wing arise from a point at lower angle of cell.

This species bears a great resemblance to *divisa*, the hyaline patch in the interno-median interspace is unbroken, and a black streak between veins 5 and 6 present.

Hab. Khási Hills (*Elwes*). *Exp.* 38 millim. Type in coll. Elwes.

Sect. III. (*Eressa*). Antennæ bipectinate in male, the branches short and dilated distally; serrate in female.

A. *The bands on abdomen yellow.*

450. **Syntomis aperiens,** *Wlk. Cat.* xxxi, p. 68; *C. & S.* no. 220.
Syntomis lydia, *Swinh. Trans. Ent. Soc.* 1891, p. 134, pl. viii, fig. 7.
Trianeura moorei, *Butl. Journ. Linn. Soc., Zool.* xii, p. 354; *C. & S.* no. 271.

Black; abdomen with a basal yellow band; female with an ochreous anal tuft. Fore wing with the hyaline patches large; a spot in cell; an elongate patch in interno-median interspace; one between veins 2 and 3; two subapical; two submarginal. Hind wing with a hyaline patch below and beyond the cell crossed by veins 2 and 3.

In the form *lydia* the spots of the fore wing are all run together, and the hind wing is wholly hyaline except for narrow black margins.

Hab. Nilgiris, 3000 to 7000 feet. *Exp.*, ♂ 24, ♀ 28 millim.

451. **Syntomis ochreipuncta,** n. sp.

♂. Dark brown; head and tegulæ yellow; abdomen with two yellow bands and lateral yellow spots on the intermediate segments. Fore wing with one subbasal, two medial, one small subapical, and two small submarginal ochreous spots. Hind wing with a large ochreous patch on the disk. First joint of tarsi yellow.

Hab. Ganjam. *Exp.* 18 millim. Type in coll. Elwes.

452. **Syntomis baiæa,** *Swinh. Trans. Ent. Soc.* 1891, p. 473, pl. 19, fig. 10.
Syntomis actea, *Swinh. Trans. Ent. Soc.* 1891, p. 474, pl. 19, fig. 7.

♂. Frons, collar, tegulæ, a spot on vertex of thorax and metathorax yellow; abdomen with seven yellow bands, the last segment blue-black; antennæ white at tips. Fore wing hyaline; the veins, margins, a broad discocellular band running inwards between veins 5 and 6, black; the black margin expanded between veins 2 and 3 and a black streak along vein 3. Hind wing hyaline, yellow on inner margin; veins narrowly black, costa and outer margin broadly so.

♀ with a large yellow patch on last segment of abdomen.

In the form *actea* nearly the whole interspace between veins 5 and 6 of the fore wing is black, the distance between these veins being variable.

Hab. Khási Hills. *Exp.*, ♂ 34, ♀ 40 millim.

453. **Syntomis era,** *Swinh. Trans. Ent. Soc.* 1891, p. 473, pl. 19, fig. 15.

♀. Differs from *baiæa* in having two yellow streaks on vertex of thorax; no yellow patch on last segment of abdomen; the margins narrowly black, the outer margin rather broadly and irregularly so; the veins yellow, some yellow within the black margins; a black lunule on discocellulars. Hind wing with the veins and margins yellow; the outer margin black, decreasing in width from apex to anal angle.

Hab. Khási Hills. *Exp.* 50 millim.

454. **Syntomis musa,** *Swinh. P. Z. S.* 1885, p. 290, pl. 20, fig. 1; *C. & S.* no. 274.
Eressa politula, *Swinh. Cat. Het. Mus. Oxon.*, ined.

Dull black; a large yellow spot on prothorax and streak on metathorax; abdomen with yellow spots on vertex and sides of

each segment; female with an ochreous anal tuft. Fore wing with a hyaline spot in cell; one in interno-median interspace, and one in each marginal interspace. Hind wing with a hyaline patch on disk, divided into four by the veins.

Hab. Kangra; Nága Hills; Bombay; Nilgiris; Ceylon; Burma. *Exp.*, ♂ 26, ♀ 34 millim.

455. **Syntomis confinis,** *Wlk. Cat.* i, p. 149; *C. & S.* no. 273.

♂. Differs from *musa* in the tip of antennæ being white; in having no yellow streak on the metathorax, and the hyaline patch in the interno-median interspace of fore wing extending to near outer margin.

Hab. Almora; Kulu. *Exp.* 24 millim.

456. **Syntomis subaurata,** *Wlk. Cat.* i, p. 149; *C. & S.* no. 275; *Moore, Lep. Ceyl.* ii, p. 36, pl. 95, fig. 4.

Differs from *musa* in being smaller, and in the interno-median hyaline patch of fore wing extending to near base of wing.

Hab. Ceylon and ? Calcutta. *Exp.* 20 millim.

457. **Syntomis affinis,** *Moore, P. Z. S.* 1877, p. 596, pl. 59, fig. 3; *C. & S.* no. 272.

♂. Ground-colour darker than in preceding three species: the spot and streak on thorax bright orange; spots of fore wing smaller, and in hind wing reduced to a small spot beyond the cell.

Hab. Andamans; ? Travancore, Calcutta, and Khási Hills. *Exp.* 22 millim.

*458. **Syntomis aterea,** *Cram. Pap. Exot.* iv, p. 240, pl. 400 A; *C. & S.* no. 222.

♂. Abdomen with two yellow bands. Fore wing with minute subbasal and subapical, two small medial, and two small submarginal hyaline spots. Hind wing with a small subbasal spot.

This species may not be Indian.

Hab. Coromandel coast. *Exp.* ♂ about 20 millim.

B. *Abdomen with crimson bands.*

459. **Syntomis erythrosoma,** n. sp.

♂. Head and thorax black; collar and tegulæ pale crimson; abdomen greenish black, the basal and fifth segments banded with crimson, the intervening segments with ventral crimson bands. Wings hyaline, the veins and margins narrowly black; fore wing

with a black spot on discocellulars, and black marginal patches between veins 2 and 3, 5 and 6, and at apex.

Hab. Matelei, Burma (*Fea*). *Exp.* 22 millim. Type in Mus. Genova.

460. **Syntomis pectoralis,** *Wlk. Cat.* i, p. 133; *C. & S.* no. 258.

Black, with the frons, tegulæ, and tip of antennæ white; first three segments of abdomen crimson. Fore wing with a milky hyaline patch filling the greater part of the subbasal and medial areas; two subapical and two submarginal spots. Hind wing hyaline, with narrow black margins.

Hab. Moulmein; E. Pegu; Cambodia. *Exp.* 26 millim.

461. **Syntomis thoracica,** *Moore, A. M. N. H.* (4) xx, 1877, p. 343; *id. Lep. Ceyl.* ii, p. 38, pl. 95, fig. 7; *C. & S.* no. 304.

Differs from *pectoralis* in the pectinations of the male antennæ being longer; the frons and tegulæ black, and only the first two segments of the abdomen being crimson. Hind wing with the veins black.

Hab. Ceylon. *Exp.*, ♂ 26, ♀ 28 millim.

Genus CALLITOMIS.

Callitomis, *Butl. Journ. Linn. Soc., Zool.* xii, p. 351 (1876).

Type, *C. syntomoides*, Butl.

Range. Kashmir; Sikhim; Nága Hills.

Antennæ with minute spines as well as cilia; hind tibiæ with a terminal pair of spurs only; wings much broader than in *Syntomis*.

462. **Callitomis syntomoides,** *Butl. Journ. Linn. Soc., Zool.* xii, p. 351; *C. & S.* no. 264.

Fig. 139.—*Callitomis syntomoides*, ♂. 1/1.

♂. Greenish black; abdomen with two orange bands. Fore wing with an obsolescent subbasal, two medial, one subapical, and one double submarginal ochreous spot. Hind wing with subbasal and submarginal spots.

Hab. Sind Valley, Kashmir; Simla. *Exp.* 34 millim.

463. **Callitomis leucosoma,** *Butl. Journ. Linn. Soc., Zool.* xii, p. 351; *C. & S.* no. 263.

♀. Head, thorax, and abdomen pale ochreous; antennæ and legs greenish black. Wings dull and semitransparent brown, marked as in *syntomoides*, except that the subbasal spot of hind wing is larger and ochreous; the spots of fore wing smaller and ochreous.

Hab. Kashmir. *Exp.* 30 millim.

464. **Callitomis multifasciata,** n. sp.

♂. Collar yellow; abdomen with a yellow band on each segment. Wings as in *leucosoma*, but duller, with the spots larger.

Hab. Sikhim; Nága Hills. *Exp.* 29 millim. Type in coll. Elwes.

Genus TRICHÆTA.

Trichæta, *Swinh. Cat. Het. Mus. Oxon.* p. 52, *ined.*

Type, *T. teneiformis*, Wlk.

Range. N.W. Himalayas.

♂. Antennæ ciliated; tibiæ without spurs. Fore wing with vein 3 from end of cell, 4 and 5 stalked.

465. **Trichæta teneiformis,** *Wlk. Cat.* vii, p. 1595; *C. & S.* no. 269.

Fig. 140.—*Trichæta teneiformis*, ♂. ½.

♂. Black; collar, metathorax, and paired dorso-lateral spots on each segment of abdomen yellow. Fore wing with a hyaline spot in the cell; a long spot in interno-median interspace; a single subapical and two submarginal spots. Hind wing with a hyaline patch below the cell crossed by veins 2 and 3.

Hab. Simla. *Exp.* 21 millim.

Genus PSICHOTOË.

Psichotoë, *Boisd. Mon. Zyg.* p. 129 (1829).

Type, *P. duvauceli*, Boisd.

Range. Plains of N. India.

Antennæ serrated in male. Fore wing broad, the apex rounded; venation as in *Syntomis*. Abdomen with the distal segments dilated and hairy.

466. **Psichotoë duvauceli,** *Boisd. Mon. Zyg.* p. 129, pl. 8, fig. 5; *C. & S.* no. 265.

Fig. 141.—*Psichotoë duvauceli,* ♂. 1/1.

♂. Head, thorax, and abdomen black, the last with two orange bands. Wings uniform fuscous hyaline.

Hab. Karáchi, Sind; Calcutta. *Exp.* 18 millim.

Genus NACLIA.

Naclia, *Boisd. Ind. Meth.* p. 60 (1840).
Dysauxes, *Hübn. Verz.* p. 171 (1818), gen. non descr.

Type, *N. ancilla*, Linn., from Europe.

Range. Europe; N.W. Himalayas.

Palpi slight and porrect. Antennæ simple. Mid tibia with one pair, hind tibia with two pairs of spurs. Venation as in *Syntomis*, except that vein 5 of the hind wing is present.

467. **Naclia punctata,** *Fabr. Sp. Ins.* ii, p. 207.
Naclia ancilla (var.), *Esp. Schmett. Eur.* pl. 85, fig. 3.

Head and thorax brown; collar and abdomen yellow, each segment of the latter with a black spot on vertex and ventral brown bands. Fore wing brown; a white spot at centre of cell, with a crescent-shaped spot below it; a postmedial spot below the costa, with a bifid spot below it on each side of vein 4. Hind wing yellow, with brown spots at base and end of cell; a broad irregular marginal brown band.

Fig. 142.
Naclia punctata, ♂. 1/1.

Hab. Europe; Kashmir, 8000 feet. *Exp.* 28 millim.

Genus EUCHROMIA.

Euchromia, *Hübn. Verz.* p. 121 (1818).

Type, *E. sperchia*, Cram., from Ashanti.

Range. African, Indian, Malayan, and Australian regions.

Antennæ bipectinated in both sexes, more heavily in the male than the female. Palpi longer than in preceding genera. Mid and hind tibiæ with minute terminal pairs of spurs. Hind wing with vein 2 absent; veins 6 and 7 from the angle of cell or stalked.

SECT. I. Hind wing with veins 3 and 4 stalked.

468. **Euchromia magna**, *Swinh. Trans. Ent. Soc.* 1891, p. 133, pl. viii, fig. 1.

Blue-black; antennæ with the distal part white; abdomen with two yellow bands. Fore wing with a small subbasal, two large medial, one subapical, and two submarginal hyaline spots. Hind wing with a large basal hyaline patch crossed by the subcostal and median veins and a submarginal spot crossed by veins 4 and 6.
Hab. N. Canara; Trincomali, Ceylon. *Exp.* 44 millim.

SECT. II. Hind wing with veins 3 and 4 from angle of cell.

469. **Euchromia polymena**, *Linn. Syst. Nat.* i, pt. 2, p. 806; *C. & S.* no. 287; *Moore, Lep. Ceyl.* ii, pl. 94, figs. 6, 6*a* (larva).

Black; head with blue spot on the vertex; the frons white; tegulæ with a white spot; collar and 1st, 4th, and 5th abdominal segments crimson, the 2nd, 3rd, and 6th edged with metallic blue.

Fig. 143.—*Euchromia polymena*, ♂. 1/1.

Fore wing with a basal metallic blue spot and two at end of cell; large orange subbasal, bifid medial, and quadrifid postmedial orange spots. Hind wing with trifid basal and quadrifid postmedial orange spots. Coxæ of fore legs and three spots on pectus white.

Larva reddish, with red tubercles; long anterior and posterior tufts of hair and shorter dense medial dorsal tufts: feeds on *Convolvulaceæ*. Pupa in a hairy cocoon.

Hab. Plains of India; Nágas; Malabar; Ceylon; Andamans; China; Penang; Ternate; Celebes. *Exp.*, ♂ 44, ♀ 52 millim.

470. **Euchromia orientalis**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 364; *C. & S.* no. 286.

Euchromia fraterna, *Butl. Journ. Linn. Soc., Zool.* xii, p. 364; *C. & S.* no. 283 A.

Similar to *polymena*, but with the 6th abdominal segment also crimson, in the form named *fraterna* only edged with crimson.
A variety occurs which has the red collar and abdominal rings

turned to orange or yellow; the two yellow spots below the cell of the fore wing may be conjoined or separate.

Hab. Burma. *Exp.* 44–50 millim.

471. **Euchromia laura**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 364; *C. & S.* no. 285.

♂. Differs from *orientalis* in having the tegulæ blue and no subbasal orange spot to fore wing.

The locality is doubtful, and it may not be Indian.

Hab. E. India? *Exp.* 50 millim.

*472. **Euchromia amœna**, *Moschl. Stettin. Ent. Zeit.* 1872, p. 350; *C. & S.* no. 281.

♀. The 1st abdominal segment white, the 4th and 5th golden yellow. Fore wing with the subbasal yellow spot in interno-median interspace joined to the medial spot.

Nearest to the Javan *horsfieldi*, Moore, and possibly not Indian.

Hab. ? Sylhet. *Exp.* 44 millim.

The following species formerly recorded as Indian are omitted.

Syntomis cerbera, Linn., C. & S. no. 227, is S. African.

Syntomis latreillii, Boisd., C. & S. no. 247, is from Java and Amboina.

Syntomis libera, Wlk., C. & S. no. 249, is from Malacca.

Syntomis ochsenheimeri, Boisd., C. & S. no. 255, is from the Congo.

Syntomis siamica, Wlk., C. & S. no. 260, is from Siam.

Syntomis diptera, Fabr., C. & S. no. 233—Fore wing with five hyaline spots, hind wing with a yellow spot. *Hab.* E. India —is too vague for identification.

Euchromia creusa, Linn. = *thelebas*, Cram., C. & S. nos. 283, 290, is from Celebes, Ceram, Gilolo, Australia.

Euchromia rhebus, Cram., C. & S. no. 288, is African.

Euchromia siamensis, Butl., C. & S. no. 289, is not Indian.

Family ZYGÆNIDÆ.

Closely allied to the *Syntomidæ*, but distinguished by vein 1 *c* of the fore wing being present, except in *Anomœotes*; vein 8 of the hind wing present and connected with 7 by a bar; veinlets in the cell of both wings generally present. Frenulum present, except in *Himantopterus*.

Larva short and cylindrical or fusiform.

Pupa in a silken cocoon.

Key to the Subfamilies.

a. Mouth-parts present.
  a′. Antennæ not flabellate at tip . . . . 1. *Zygæninæ*.
  b′. Antennæ highly or somewhat flabellate at tip. 2. *Chalcosiinæ*.
b. Mouth-parts wanting . . . . 3. *Phaudinæ*.

Subfamily ZYGÆNINÆ.

Small or medium-sized moths, of semidiurnal habit and rather elongate narrow wings. Antennæ simple, ciliated, or pectinated,

Fig. 144.—Larva of *Zygæna filipendulæ*. $\frac{1}{1}$.

with short branches. Palpi short and porrect. Legs with the spurs almost always minute or wanting.

Larva short and cylindrical.

Pupa in a close-woven silken cocoon.

Key to the Genera.

a. Antennæ dilated distally. Fore wing with veins 9, 10, 11 stalked together . . . . 1. ZYGÆNA, p. 230.
b. Antennæ not dilated distally.
  a′. Fore wing with all the veins from the cell.
    a^2. Hind wing with vein 6 absent.
      a^3. Wings short and broad.
        a^4. Hind wing with all the veins from the cell.
          a^5. Hind tibiæ with one pair of spurs; antennæ of male with few branches . . . . 2. DENDROCERA, [p. 231.
          b^5. Hind tibiæ with two pairs of spurs; antennæ of male with many branches . . . . 3. CHRYSARTONA, [p. 232.
        b^4. Hind wing with veins 3 and 4 stalked . . . . 4. BRACHARTONA, [p. 233.
      b^3. Wings long and narrow.
        a^4. Hind wing with vein 5 remote from 7.
          a^5. Fore wing very narrow; antennæ of male pectinated.
            a^6. Palpi long . . . . 6. ARTONA, p. 234.
            b^6. Palpi very short . . . . 7. TASEMA, p. 236.
          b^5. Fore wing broader; antennæ of male simple . . . . 18. ARÆOCERA, p. 244.
        b^4. Hind wing with vein 5 arising close to 7 . . . . 19. ARACHOTIA, p. 245.
      c^3. Fore wing produced at apex and broad . . . . 13. PHACUSA, p. 240.

b^2. Hind wing with vein 6 present.
a^3. Abdomen not tufted at end.
a^4. Hind wing long and narrow .... 14. GOË, p. 242.
b^4. Hind wing broad and rounded.... 12. CLELEA, p. 239.
b^3. Abdomen tufted at end .... 8. LOPHOSOMA, p. 237.
b'. Fore wing with veins 7 and 8 stalked. Hind wings with veins 6 and 7 stalked; 2, 3, 4 from lower angle of cell; 5 from upper angle; palpi upturned; legs with long spurs .... 5. CALLARTONA, [p. 233.
c'. Fore wing with veins 8 and 9 stalked.
a^2. No veinlets in the cell .... 9. MONOSCHALIS, [p. 238.
b^2. Veinlets in the cell of both wings .... 17. PLATYZYGÆNA, [p. 243.
d'. Fore wing with veins 8, 9, 10 stalked.
a^2. Hind wing with all the veins from the cell .... 10. THYRASSIA, p. 238.
b^2. Hind wing with vein 2 from angle of cell; veins 3, 4, 5 stalked .... 11. PROCOTES, p. 239.
e'. Fore wing with veins 5, 6, 7 stalked together. Hind wing with veins 2 and 5 absent .... 15. EPHEMEROIDEA, [p. 242.
f'. Fore wing with veins 9 and 10 stalked .. 16. PIAROSOMA, p. 243.

Genus **ZYGÆNA**.

Zygæna, *Fabr. Syst. Ent.* p. 550 (1775).

Type, *Z. filipendulæ*, Linn., from Europe.
Range. The whole Palæarctic region, including Afghanistan, the Himalayas, and Japan; S. Africa.

Antennæ simple and dilated distally into a club, the tip pointed. Fore wing with veins 9, 10, 11 stalked. Hind wing with all the veins from the cell. Legs with no spurs.

A. *Fore wing with yellow spots.*

473. **Zygæna cashmirensis**, *Koll. Hügel's Kaschmir*, iv, p. 459, pl. 19, fig. 6; *C. & S.* no. 213.
Zygæna asoka, *Moore, P. Z. S.* 1879, p. 389; *C. & S.* no. 212.

Fore wing black shot with green, with five yellow spots. Hind wing crimson, with some black on the costa near the base and a

Fig. 145.—*Zygæna cashmirensis*, ♂. 1/1.

black medial band which may be broken at middle; margin black, narrow at middle. A pair of yellow lateral spots on the collar.

Male with three, female with two crimson rings on the terminal segments of abdomen.

In the var. *asoka* the spots on fore wing are smaller. Hind wing with black the predominant colour, the crimson being reduced to patches. Males from Nepal in the British Museum are exactly intermediate between the two forms.

Hab. Kashmir; Kangra; Punjab; Nepal. *Exp.*, ♂ 30, ♀ 38 millim.

474. **Zygæna erythrosoma**, n. sp.

♀. Differs from typical *cashmirensis* in being without the yellow spots on the collar, and in having the whole of the terminal segments of the abdomen crimson.

Hab. Almora. *Exp.* 36 millim. Type in B. M.

B. *Fore wing with red spots.*

475. **Zygæna afghana**, *Moore, Lep. E. I. Co.* p. 286, pl. vii *a*, fig. 1; *C. & S.* no. 211.

♀. Fore wing with the spots red, with narrow white edges and very large, the basal spot occupying the whole base of wing; the interno-median spot joined to the subcostal one. Hind wing red, with narrow black border. Collar and abdomen, except basal segments, red.

Hab. Afghanistan; Quetta. *Exp.* 28 millim.

Genus DENDROCERA.

Dendrocera, *Hmpsn. Ill. Het.* ix, *ined.*

Type, *D. quadripunctata*, Hmpsn.

Range. Ceylon.

Antennæ bipectinated in male, simple in female, the branches in the former sex widely separated, the secondary branches standing out from them in the same plane. Palpi porrect and of moderate length. Mid and hind tibiæ with one pair of spurs. Wings short and broad. Hind wing with the upper portion of cells shorter than the lower; vein 6 absent.

476. **Dendrocera quadripunctata**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 2.

Fig. 146.—*Dendrocera quadripunctata*, ♂. $\frac{2}{1}$.

Purplish fuscous. Fore wing with two antemedial and two postmedial ochreous spots.

Hab. Ceylon. *Exp.* 14 millim.

Genus CHRYSARTONA.

Chrysartona, *Swinh. Cat. Het. Mus. Oxon.* p. 56, *ined.*

Type, *C. stipata*, Wlk.

Range. Himalayas and Burma.

Antennæ bipectinated in male, simple in female. Palpi short and porrect. Mid tibiæ with one pair of minute spurs, hind tibiæ with two pairs. Wings short and broad; all the veins from the cell; hind wing with vein 6 absent.

In *Procris*, to which *stipata* has been referred, vein 6 of the hind wing is present.

477. **Chrysartona stipata**, *Wlk. Cat.* i, p. 114; *Butl. Ill. Het.* i, p. 13, pl. 7, fig. 9; *C. & S.* no. 214.

Head, thorax, legs, the base of costa of fore wings above, and of both wings below metallic coppery green or blue. Wings black: fore wing with two antemedial and two postmedial white spots:

Fig. 147.—*Chrysartona stipata*, ♂. 1/1.

hind wing with a single or double antemedial and one postmedial spot; cilia white at apex of both wings and anal angle of hind wing. Abdomen black, banded with white below.

Hab. Kangra; Sikhim; Bernardmyo, Burma. *Exp.*, ♂ 18, ♀ 20 millim.

478. **Chrysartona refulgens**, n. sp.

♀. Head, thorax, and abdomen suffused with metallic copper; underside of thorax metallic copper and green; abdomen with whitish bands. Wings black; fore wing with a coppery spot at base; two large yellow antemedial spots and two postmedial; hind wing with a yellow patch on inner area from base to near anal angle and a large spot beyond the cell.

Hab. Matelei, Burma (*Fea*). *Exp.* 26 millim. Type in Mus. Genova.

Genus **BRACHARTONA.**

Brachartona, *Hmpsn. Ill. Het.* viii, p. 44 (1891).

Type, *B. quadrimaculata*, Moore.
Range. N.W. Himalayas; Tenasserim.
Antennæ bipectinated in the male, ciliated in the female. Fore wing with veins 8 and 9 from cell. Hind wing with veins 3 and 4 stalked; 6 absent.

SECT. I. Male with antennæ long, the branches slender.

479. **Brachartona quadrimaculata**, *Moore, P. Z. S.* 1879, p. 390; *C. & S.* no. 298.

Fig. 148.—*Brachartona quadrimaculata*, ♂. 1/1.

Dull purplish black. Fore wing with a large ochreous spot beyond the cell. Hind wing with an ochreous streak beyond the cell, curving up to the costa beyond it.
Hab. Mussooree; Kangra; Dharmsála. *Exp.* 18 millim.

Sect. II. Male with short antennæ, the branches stout and decreasing to apex.

480. **Brachartona catoxantha**, n. sp.

♂. Upperside uniform dark brown; frons and palpi yellow, the former with a black spot at middle; underside of the thorax, abdomen, and the legs yellow. Fore wing brown below, with yellow patches on the costa at base and apex; hind wing brown; the costal area yellow, the veins on it black.
Hab. Tenasserim Valley (*Doherty*). *Exp.* 16 millim. Type in coll. Druce.

Genus **CALLARTONA**, nov.

Type, *C. purpurascens*, Hmpsn.
Range. Nilgiris.
Palpi upturned, reaching the top of head. Fore wing with veins 7 and 8 stalked. Hind wing with veins 2, 3, and 4 from close to the lower end of cell, 5 from near upper end, 6 and 7 stalked. Tibiæ of mid and hind legs with the spurs long.

481. **Callartona purpurascens**, *Hmpsn. Ill. Het.* viii, p. 44, pl. 139, fig. 4.

♀. Black, with a brilliant purple shot; head and tegulæ yellow.

Fore wing with two large yellow triangular spots on the costa. Hind wing with a yellow streak below the cell, curving up to the costa beyond it. Legs yellow.

Hab. Nilgiris, W. slopes, 3000 feet. *Exp.* ♀ 22 millim.

Fig. 149.—*Callartona purpurascens*, ♀. ½.

Genus ARTONA.

Artona, *Wlk. Cat.* ii, p. 439 (1854).
Balatæa, *Wlk. Cat.* xxxi, p. 110 (1864).
Bintha, *Wlk. Cat.* xxxi, p. 127 (1864).
Rhaphidognatha, *Feld. Wien. Ent. Mon.* vi, p. 31 (1862).

Type, *A. discivitta*, Wlk.

Range. Amur; China; Japan; Himalayas; South Indian Hills; Nága Hills; Burma; Perak; Java; Amboina.

Antennæ bipectinated in male, minutely ciliated in female, the distal portion slighter. Palpi long and porrect. Fore wing very narrow, with all the veins from the cell. Hind wing with vein 5 from middle of discocellulars, vein 6 absent. Mid and hind tibiæ with a terminal pair of minute spurs.

A. *Abdomen with no yellow.*

482. **Artona postvitta**, *Moore, Lep. Atk.* p. 13; *C. & S.* no. 297.

Dark brown; hind wing with a broad medial white fascia; cilia whitish; tarsal joints white.

Hab. Sikhim. *Exp.* 20 millim.

483. **Artona postalba**, *Elwes, P. Z. S.* 1890, p. 379, pl. xxxii, fig. 16.

♂. Brown. Fore wing with a slight yellow streak from the base; two medial and two postmedial yellow spots; cilia pale yellow. Hind wing with the disk white; cilia blackish.

Hab. Sikhim, 12,000 feet. *Exp.* 18 millim.

B. *Abdomen of male black, with yellow segmental bands; female yellow above.*

484. **Artona discivitta**, *Wlk. Cat.* ii. p. 440; *C. & S.* no. 293: *Butl. Ill. Het.* v, pl. 84, fig. 8.

♂. Dark purplish brown; head at sides and tegulæ yellow. Fore wing with a yellow streak from base to end of cell; a spot

beyond and rather above the cell. Hind wing with a yellow streak below the cell and a spot beyond it. Cilia dark.

Hab. Almora; Nilgiris; Shevaroys. *Exp.* 20 millim.

485. **Artona zebraica**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 356; *id. Ill. Het.* v, pl. 84, fig. 9; *C. & S.* no. 299.
Artona fulvida, *Butl. Journ. Linn. Soc., Zool.* xii, p. 356; *C. & S.* no. 295.
Artona nigrescens, *Butl. Journ. Linn. Soc., Zool.* xii, p. 356; *C. & S.* no. 300.

♂. Fore wing with a subcostal as well as the medial streak from the base, and both interrupted at middle; a spot below the end of the cell, and two postmedial spots. Hind wing with the whole basal area yellow, except a costal dark streak; outer margin dark.

Fig. 150.—*Artona zebraica*, ♂. $\frac{1}{1}$.

♀. The abdomen yellow above, with a narrow black line on the first two segments; the eighth segment with the sides black, and sometimes also the vertex.

Some males have the abdomen coloured as in the females. In Mandi, Moulmein, and Kangra specimens the cilia are dark, in those from the Nága Hills and Perak the tips are yellow.

Hab. Kulu; Mandi; Kángra; Sikhim; Nágas; Perak. *Exp.* 20–24 millim.

486. **Artona zebra**, *Elwes, P. Z. S.* 1890, p. 379, pl. xxxii, fig. 11.

♂. Differs from *zebraica* in the subcostal and medial streaks of the fore wing being short and each followed by a large spot; a subapical elongate spot; no spot below the end of cell. Hind wing with two yellow streaks from the base. Cilia yellow, brown at apex of both wings.

Hab. Sikhim, 11,000 feet. *Exp.* 18 millim.

487. **Artona sikkimensis**, *Elwes, P. Z. S.* 1890, p. 379, pl. xxxii, fig. 17.

♂. Fore wing with the subcostal yellow streak, the spot below end of cell, and subapical elongate spot only. Hind wing with one streak from base. Cilia dull yellow.

Hab. Sikhim, 12,000 feet. *Exp.* 21 millim.

488. **Artona confusa**, *Butl. Journ. Linn. Soc., Zool.* xii, p. 357; *id. Ill. Het.* v, pl. 84, fig. 10; *C. & S.* no. 292.

♂. The abdomen banded with black. Antennæ with the tips yellow; head black; collar and tegulæ yellow. Fore wing with the subcostal and medial basal streaks; the subapical and postmedial spots single and very large. Hind wing yellow, with broad black border.

♀. The abdomen yellow, with the last two segments black, the tips yellow.

Hab. N.W. Himalayas; Sikhim. *Exp.* 26 millim.

Genus TASEMA.

Tasema, *Wlk. Cat.* vii, p. 1597 (1856).

Type, *T. bipars*, Wlk.

Range. Kángra; Nága Hills; Calcutta; Burma.

Antennæ bipectinated in male, simple in female. Palpi very short. Fore wing narrow, the outer margin erect; all the veins from the cell. Hind wing with vein 6 absent.

489. **Tasema bipars**, *Wlk. Cat.* vii, p. 1597; *C. & S.* no. 216.

Fig. 151.—*Tasema bipars*, ♂. 1/1.

♂. Black. Hind wing hyaline; the costal area and margins black.

Hab. Kángra; Nágas. *Exp.* 16 millim.

490. **Tasema longipennis**, n. sp.

♂. Fore wing longer, with outer margin more oblique than in *bipars*. Hind wing more thickly clothed with black hair-like scales.

Hab. Bernardmyo, Burma, 6000 feet (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

491. **Tasema fuliginosa**, *Moore, Lep. Atk.* p. 14; *C. & S.* no. 294.

Dark brown; the antennæ, palpi, costa, and discocellulars of fore wing black.

Hab. Calcutta. *Exp.*, ♂ 15, ♀ 17 millim.

492. **Tasema nigra,** n. sp.

♂. Differs from *fuliginosa* in being uniform smoky black, not brown.

♀. The pectinations of antennæ shorter than in *fuliginosa*; end of abdomen with a tuft of ochreous hairs.

Hab. Bernardmyo, Burma (*Doherty*). *Exp.*, ♂ 15, ♀ 17 millim. Type in coll. Elwes.

Genus LOPHOSOMA.

Lophosoma, *Swinh. Cat. Het. Mus. Oxon.* p. 59, *ined.*

Type, *L. cupreum*, Wlk.

Range. Himalayas; Bengal; Ganjam; Andamans.

Antennæ bipectinate in male, simple in female, the terminal portion thinner. Palpi short and porrect. Wings narrow; outer margin of fore wing oblique; hind wing with vein 6 present. Mid tibia with one pair, hind tibia with two pairs of minute spurs. Abdomen with lateral tufts of hair on terminal segments.

493. **Lophosoma cupreum,** *Wlk. Cat.* vii, p. 1596; *C. & S.* no. 301.

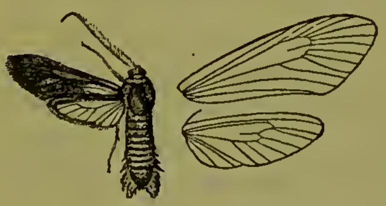

Fig. 152.—*Lophosoma cupreum*, ♂. 1/1.

Frons, genæ, and a few of the scales on collar and tegulæ golden metallic. Antennæ, vertex of head, thorax, and fore wing dark brown, shot with blue, especially in Sikhim specimens; metathorax metallic copper; abdomen purplish, with coppery bands to each segment; lateral tufts black, with a purple gloss. Fore wing with basal hyaline streaks below the costa and median nervure; a hyaline spot at end of cell and one below it. Hind wing hyaline, with the costa and outer margin black.

Tascia, Wlk., type *chrysoletus*, in which this species has been placed, is a very distinct African genus.

Hab. Kulu; Sikhim; Andamans. *Exp.* 24 millim.

494. **Lophosoma quadricolor,** *Wlk. Cat.* vii, p. 1596; *C. & S.* no. 302.

♂. Head, thorax, and fore wings brown, shot with green. Hind wing with the costal area fuscous, the rest hyaline. Abdomen copper-coloured, the last two segments purplish.

Hab. Bengal; Ganjam. *Exp.* 20 millim.

Genus MONOSCHALIS.

Monoschalis, *Hmpsn. Ill. Het.* ix, *ined.*

Type, *M. virescens*, Hmpsn.
Range. Ceylon.
♂. The antennæ bipectinated. Palpi short and porrect. Tibiæ with no spurs. Fore wing with veins 8 and 9 stalked. Hind wing with vein 6 present.

495. **Monoschalis virescens**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 11.

Fig. 153.—*Monoschalis virescens*, ♂. 1/1.

♂. Black, shot with green: abdomen with 4th and 5th segments yellow. Fore wing with a hyaline spot in end of cell, a large spot below the end; a bifid submarginal and small spot near outer angle.
Hab. Colombo, Ceylon. *Exp.* 22 millim.

Genus THYRASSIA.

Thyrassia, *Butl. Journ. Linn. Soc., Zool.* xii, p. 355 (1876).

Type, *T. subcordata*, Wlk.
Range. Plains of N. India, S. India, and Ceylon.
Antennæ bipectinated in both sexes, more heavily in the male than the female. Palpi short and porrect. Tibiæ with no spurs. Fore wings with veins 8, 9, and 10 stalked together. Hind wing with all the veins from the cell, 8 absent.

496. **Thyrassia subcordata**, *Wlk. Cat.* i, p. 132; *C. & S.* no. 280; *Butl. Ill. Het.* i, p. 19, pl. vii, fig. 5.
Thyrassia aurodisca, *Hmpsn. Ill. Het.* viii, p. 44, pl. cxxxix, fig. 10.

Fig. 154.—*Thyrassia subcordata*, ♂. 1/1.

Frons, collar, metathorax, and lateral streaks on each abdominal segment orange. Fore wing dark brown; a yellowish or whitish hyaline spot at end of cell, a trifid spot below it, a bifid or trifid subapical spot. Hind wing with an orange patch occupying the basal inner area and curving up to the costa beyond the cell.

T. aurodisca, the southern form, has the orange of hind wing more extensive and the border narrower.
Hab. Plains of N. India, S. India, and Ceylon. *Exp.*, ♂ 24, ♀ 26 millim.

Genus PROCOTES.

Procotes, *Butl. Journ. Linn. Soc., Zool.* xii, p. 355 (1876).

Type, *P. diminuta*, Wlk.
Range. Ceylon.

♂. Antennæ bipectinated. Palpi short and porrect. Tibiæ without spurs. Abdomen with short lateral tufts of hair on the last segment. Fore wing with veins 4 and 5, and 8, 9, 10 stalked. Hind wing with veins 3, 4, 5 stalked.

497. **Procotes diminuta,** *Wlk. Cat.* i, p. 230; *Moore, Lep. Ceyl.* ii, p. 37, pl. 95, fig. 3; *C. & S.* no. 217.

Fig. 155.—*Procotes diminuta*, ♂. ½.

♂. Black, shot with blue-green. Fore wing with a hyaline spot in the end of cell, a long streak below it, and one beyond it. Hind wing with the area below and beyond the cell hyaline.

Hab. Trincomali, Ceylon. *Exp.* 23 millim.

Genus CLELEA.

Clelea, *Wlk. Cat.* ii, p. 465 (1854).

Type, *C. sapphirina*, Wlk.
Range. China; Formosa; Sikhim; Khási and Nága Hills; Burma.

Antennæ bipectinate in male, nearly simple in female. Palpi of moderate length and porrect. Fore wing with all the veins from the cell. Hind wing broad, with all the veins from the cell.

498. **Clelea sapphirina,** *Wlk. Cat.* ii, p. 465.

Fig. 156.—*Clelea sapphirina*, ♂. ½.

♂. Black: the shaft of antennæ, head, and legs above metallic blue. Fore wing with short metallic blue streaks from the base along the costa and inner margin; a transverse antemedial band broken at middle; a subapical almost complete ring with a submarginal spot below it; a marginal line. Hind wing with a metallic blue streak sometimes present near inner margin. Underside of fore wing with some blue marginal streaks at apex; hind wing streaked with blue throughout. Cilia whitish.

♀. The frons, collar, and tegulæ blue, a streak on vertex of thorax, and at sides of meso- and metathorax; shaft of antennæ more vivid blue.

Abdomen in both sexes sometimes entirely brown, sometimes

with blue segmental lines, sometimes with the terminal segments entirely metallic blue above.

Hab. Sikhim; Momeit, Burma, 2000 feet; China. *Exp.*, ♂ 24, ♀ 30 millim.

499. **Clelea discriminis**, *Swinh. Trans. Ent. Soc.* 1891, p. 475.

Differs from *sapphirina* in the streaks from the base of the fore wing being green, and the lower one being along the median nervure; the subapical markings more parallel; the marginal line and blue on hind wing absent. Underside with a streak on median nervure of fore wing and several streaks on the hind wing.

Hab. Sikhim; Nága Hills, 3000 feet. *Exp.* 27 millim.

500. **Clelea nigroviridis**, *Elwes, P. Z. S.* 1890, p. 380.

♂. Differs from *sapphirina* in the markings being metallic green not blue, and those of the fore wing being all joined together so as to form reticulations; the underside of fore wing almost without markings.

Differs from *chala*, Moore, from Formosa, in having no metallic colour on the end of abdomen and the markings being green not blue.

Hab. Nágas; Bernardmyo, Burma, 6000 feet. *Exp.* 27 millim.

501. **Clelea plumbeola**, n. sp.

Black; fore wing with antemedial and broad and somewhat irregular postmedial plumbeous bands.

Hab. Bernardmyo, Burma, 6000 feet (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

Genus PHACUSA.

Phacusa, *Wlk. Cat.* i, p. 150 (1854).
Notioptera, *Butl. Journ. Linn. Soc., Zool.* xii, p. 355 (1876).

Type, *P. tenebrosa*, Wlk.

Range. N.W. Himalayas; Assam Hills; Burma; Nicobars; Java; Celebes; Philippines.

Antennæ bipectinated in both sexes, more heavily in the male than the female. Palpi short and porrect. Mid and hind tibiæ with minute terminal spurs. Wings broad; hind wing with all the veins given off from the cell. Vein 12 absent.

Sect. I. Fore wing with veins 8 and 9 stalked.

502. **Phacusa dolosa**, *Wlk. Cat.* vii. p. 1594; *C. & S.* no. 278; *Butl. Ill. Het.* v. p. 27, pl. 84. fig. 11.

♂. Blue-black. Fore wing with three small medial white streaks; two minute subapical and two larger submarginal spots. Hind wing with a minute submarginal spot.

Hab. ? Assam. *Exp.* 30 millim.

503. **Phacusa properta**, *Swinh. P. Z. S.* 1889, p. 400, pl. xliii, fig. 6.

Shafts of antennæ bluish green; collar, metathorax, and 6th and 7th segments of abdomen, and lateral spots on some of the others, copper-coloured. Fore wing with hyaline streaks above and below costal nervure; a large spot filling the cell; another below it; two subapical and two submarginal spots. Hind wing hyaline, with the veins and margins black.

Hab. Nága Hills; Rangoon; Nicobars. *Exp.* 30 millim.

504. **Phacusa tenebrosa**, *Wlk. Cat.* i. p. 150; *C. & S.* no. 303; *Butl. Ill. Het.* i. p. 20, pl. 12. fig. 1.

Bronzy black. Head, collar, metathorax, base of fore wing, and a band on each segment of abdomen, except the last, copper-coloured. Markings as in *properta*.

Fig. 157.—*Phacusa tenebrosa*, ♂. 1/1.

In some specimens the fore wing has a hyaline streak below the costa another on inner margin and one between vein 5 and 6; in others these are all absent. In some specimens the hyaline spots of the hind wing are all joined together, in others reduced in size, and the subbasal series separated from the subapical by a black band.

Hab. Momeit, Burma; Almorah. *Exp.* 33 millim.

Sect. II. Fore wing with vein 8 from the cell.

505. **Phacusa cyanocera**, n. sp.

♂. Black. The shaft of antennæ blue; head, collar, and tegulæ with a few copper scales; abdomen greenish black; veins and margins of wings black. Wings hyaline; fore wing with a copper spot at base; the inner margin broadly black, with a copper spot at middle.

Hab. Bernardmyo, Burma (*Doherty*). *Exp.* 32 millim. Type in coll. Elwes.

Sect. III. Fore wing with vein 10 out of 9.

506. **Phacusa khasiana**, *Moore, Lep. Atk.* p. 12; *C. & S.* no. 215.

♀. Antennæ, head, thorax, and abdomen greenish black. Wings hyaline, with the veins and margins black; the inner margins of fore wing, costa of hind wing, and discocellulars of both wings broadly so.

Hab. Khásis; Nágas, 4000 feet. *Exp.* 36 millim.

Genus **GOË**, nov.

Type, *G. diaphana*, Hmpsn.
Range. Burma.
♂. Antennæ bipectinated; palpi short and porrect. Wings

Fig. 158.—*Goë diaphana*, ♂. 1/1.

rather narrow. Fore wing with apex rounded and outer margin oblique. Hind wing with vein 8 present. Tibiæ without spurs.

507. **Goë diaphana**, n. sp.

♂. Black; the wings diaphanous black; the veins and margins narrowly black.

Hab. Bernardmyo, Burma, 6000 feet (*Doherty*). *Exp.* 28 millim. Type in coll. Elwes.

Genus **EPHEMEROIDEA**, nov.

Type, *E. ariel*, Hmpsn.
Range. Burma.
♂. Antennæ with the branches rather short. Palpi long. Fore wing with the cell very narrow at base, expanded at the end; veins 5, 6, and 7 stalked together. Hind wing with veins 5 and 6 absent. Legs without spurs.

Fig. 159.—*Ephemeroidea ariel*, ♂. 1/1.

508. **Ephemeroidea ariel**, n. sp.

Head, thorax, and abdomen black, with copper and green reflections. Wings hyaline, the veins and margins narrowly black; the inner margin of fore wing and costa of hind wing broadly so.

Hab. Bernardmyo, Burma, 6000 feet, May (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

509. **Ephemeroidea flavocincta**, n. sp.

♀. Antennæ black; head, collar, and tegulæ brilliant metallic green; thorax black above, green below; abdomen with the two

basal and three terminal segments black above, green below, the third, fourth, and fifth segments bright yellow. Wings hyaline the veins and margins black; fore wing with some yellow at base. Femora and tibiæ metallic green; tarsi white.

Hab. Matelei, Burma (*Fea*). *Exp.* 28 millim. Type in Mus. Genova.

Genus **PIAROSOMA**, nov.

Type, *P. albicinctum*, Hmpsn.

Range. Burma.

♂. Thorax and abdomen stout; branches of antennæ short. Fore wing with the apex somewhat truncate and outer margin

Fig. 160.—*Piarosoma albicinctum*, ♂. ½.

rounded; vein 2 from lower angle of cell; 9 and 10 stalked. Hind wing broad, with veins 2 and 3 from a point near angle of cell.

510. **Piarosoma albicinctum**, n. sp.

♂. Blue-black; collar and first segment of abdomen white; the other segments slightly fringed with white. Wings whitish hyaline; the veins black. Fore wings with the apex and outer and inner margins, the cell, and streaks along veins 2 and 11, and for a short way from margin along 5 broadly black. Hind wing with the black margin dentate at vein 2.

Hab. Bernardmyo, Burma, 6000 feet (*Doherty*). *Exp.* 36 millim. Type in coll. Elwes.

Genus **PLATYZYGÆNA**.

Platyzygæna, *Swinh. Cat. Het. Mus. Oxon.* p. 59, *ined.*

Type, *P. mölleri*, Elw.

Range. Sikkim; Assam.

♀. Antennæ simple. Palpi very minute. Thorax and abdomen stout; wings broad; fore wing with veins 8 and 9 stalked; hind wing with all the veins from the cell.

511. **Platyzygæna mölleri**, *Elw. P. Z. S.* 1890, p. 385, pl. xxxii, fig. 13.

♀. Head, thorax, and abdomen blue-black, the last with white

segmental bands; proboscis crimson. Fore wing black at base, followed by a broad white band, with four black spots on it below the costa, median, interno-median, and sub-median nervures; the

Fig. 161.—*Platyzygæna mölleri*, ♀. $\frac{1}{1}$.

one below the interno-median displaced outwards; the outer half of wing black, with the veins on it grey; a grey discocellular band. Hind wing with the basal area white to the middle of costa and near anal angle; apical area and outer margin black.

Hab. Sikhim; Assam. *Exp.* 36 millim.

Genus **ARÆOCERA**, nov.

Type, *A. cyanescens*, Hmpsn.

Range. Japan; China; Sikhim; Burma.

Antennæ simple in both sexes. Tibiæ without spurs in male; female with minute spurs. Fore wing broad, the costa arched and apex acute. Hind wing with vein 6 absent.

512. **Aræocera cyanescens**, n. sp.

♂. Head, thorax, and abdomen black. Fore wing fuscous, shot with purple. Hind wing fuscous.

Fig. 162.—*Aræocera cyanescens*, ♂. $\frac{1}{1}$.

Hab. Momeit, Burma (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

513. **Aræocera posthyalina**, n. sp.

♀. Differs from *cyanescens* in the thorax and abdomen being shot with purple, and in the hind wing being hyaline, suffused with black towards the margins.

Hab. Sikhim (*Elwes*). *Exp.* 28 millim. Type in coll. Elwes.

Genus ARACHOTIA.

Arachotia, *Moore, Lep. Atk.* p. 14 (1879).

Type, *A. flaviplaga*, Moore.
Range. Sikhim; Nága Hills.
Antennæ long, bipectinated in male with the branches short, simple in the female. Palpi short and porrect. Mid and hind tibiæ with minute terminal pairs of spurs. Wings narrow. Hind wing with vein 5 arising close to 7.

514. **Arachotia flaviplaga**, *Moore, Lep. Atk.* p. 14; *C. & S.* no. 393.

Metallic blue-green; antennæ broadly banded with white towards the tips. Frons ochreous; abdomen with ochreous ventral and lateral bands. Fore wing with an ochreous subbasal band from median nervure to inner margin; a large hyaline spot in end of cell and two below it, and seven streaks between the nervules beyond.

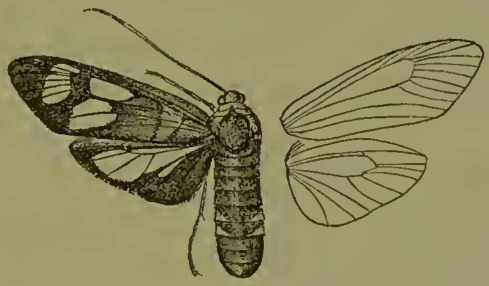

Fig. 163.—*Arachotia flaviplaga*, ♀. $\frac{1}{1}$.

Hind wing with the costa white above; a hyaline patch filling the lower part of the cell and interspaces below and beyond; the veins, margins, and inner lobe of wing black. Pectus with ochreous spots.
Hab. Sikhim; Nága Hills. *Exp.*, ♂ 35, ♀ 44 millim.

515. **Arachotia vespoides**, *Moore, P. Z. S.* 1879, p. 390; *C. & S.* no. 394.

♀. Antennæ black; palpi yellow with black tips. Frons grey; abdomen with yellow bands on the first six segments above, grey below. Wings hyaline, yellow at base; fore wing with the margins, the subcostal, median, and discocellular veins black, the marginal band dentated at vein 2. Hind wing with the costa white, the marginal band black and dentated at vein 2.
Hab. N. India. *Exp.* 40 millim.

Subfamily CHALCOSIINÆ.

The antennæ bipectinated to the tips in both sexes, more heavily in the male than the female, the branches dilated distally; the tip of antenna somewhat flabellate. Palpi minute and porrect. Fore

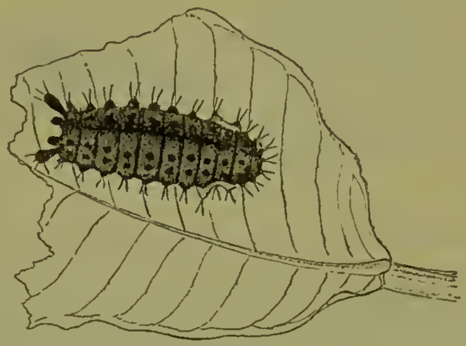

Fig. 164.—Larva of *Trypanophora taprobanes.* 1/1. (From Moore, Lep. Ceyl. ii. pl. 95, fig. 8 *a*.)

wing with a veinlet in the cell more or less developed. Mid and hind tibiæ with minute terminal pairs of spurs.

Larva short and thick with tubercles, from which arise short hairs, and forming a close cocoon.

Key to the Genera.

a. Wings not uniformly semi-diaphanous.
 a'. Fore wing with the cell long.
  a². Fore wing with no veinlets between vein 12 and the costa.
   a³. Fore wing with the veins nearly straight.
    a⁴. Wings long and *Zygæniform*; hind wing with all the veins from the cell.
     a⁵. Fore wing with veins 9 and 10 stalked .... 1. CALLIZYGÆNA, p. 248.
     b⁵. Fore wing with veins 7, 8, and 9 stalked .... 2. TRYPANOPHORA, p. 249.
    b⁴. Wings long but considerably broader.
     a⁵. Hind wing with all the veins from the cell.
      a⁶. Fore wing with vein 7 given off further from the cell than 9 .... 8. HERPA, p. 257.
      b⁶. Fore wing with vein 7 given off nearer the cell than 9.
       a⁷. Fore wing with veins 4 and 5 stalked
        a⁸. Fore wing with vein 11 anastomosing with 12. 9. PINTIA, p. 258.
        b⁸. Fore wing with vein 11 not anastomosing with 12.

a[9]. Fore wing with vein 6 absent, 7 from cell, 8 and 9 stalked. 3. PHLEBOHECTA, p. 251.

b[9]. Fore wing with vein 6 present, 7, 8, and 9 stalked .... 4. SORITIA, p. 251.

c[9]. Fore wing with veins 6, 7, 8, and 9 stalked together .... 10. HETERUSIA, p. 259.

b[7]. Fore wing with veins 4 and 5 from cell........ 5. PIDORUS, p. 254.

c[4]. Hind wing broader and more rounded.

b[5]. Hind wing with veins 4 and 5 not stalked.

a[6]. Fore wing with vein 11 not anastomosing with 12.

a[7]. Hind wing with veins 4 and 5 from cell.

a[8]. Fore wing with veins 4 and 5 on a long stalk; ♂ with large claspers. 11. MILLERIA, p. 262.

b[8]. Fore wing with veins 4 and 5 on a short or no stalk; ♂ with small claspers .... 12. CHALCOSIA, p. 264.

b[7]. Hind wing with veins 4 and 5 stalked .... 13. CORMA, p. 268.

b[6]. Fore wing with vein 11 anastomosing with 12.

a[7]. Fore wing with vein 6 from below angle of cell. 15. POMPELON, p. 271.

b[7]. Fore wing with vein 6 from angle of cell or stalked with 7, 8, and 9. 14. CYCLOSIA, p. 269.

d[4]. Wings very short and broad.

a[5]. Fore wing with vein 11 not anastomosing with 12...... 6. HETEROPAN, p. 256.

b[5]. Fore wing with vein 11 anastomosing with 12 .... 7. ARBUDAS, p. 257.

e[4]. Wings long and very broad; fore wing with the apex square; veins 7, 8, and 9 stalked; ♂ with claspers very large ...... 16. AMESIA, p. 272.

b[3]. Fore wing with veins 4 and 5 much curved.

a[4]. Fore wing with vein 3 not stalked with 4 and 5.

a[5]. Fore wing with vein 10 not stalked with 7, 8, and 9 .... 17. ERASMIA, p. 273.

b[5]. Fore wing with vein 10 stalked with 7, 8, and 9 .... 19. CADPHISES, p. 275.

b[4]. Fore wing with vein 3 stalked with 4 and 5; 10 with 7, 8, and 9. Hind wing with veins 4 and 5 stalked, and all these much curved .... 18. CAMPYLOTES, p. 274.

b^2. Fore wing with veinlets between vein 12 and the costa.
a^3. Fore wing not produced at apex; veins 6, 7, 8, and 9 stalked together.
a^4. Fore wing with no bar between veins 1 *b* and *c*; the stalk of veins 7, 8, and 9 much curved; veins 10 and 11 anastomosing with 12 .... 20. ISBARTA, p. 276.
b^4. Fore wing with a bar between veins 1 *b* and *c*; stalk of veins 7, 8, and 9 not much curved; vein 10 not anastomosing with 12 .... 21. CALLAMESIA, p. 277.
b^3. Fore wing much produced at apex, the outer margin very oblique; veins 7, 8, and 9 stalked.
a^4. Hind wing rounded .... 22. GYNAUTOCERA, p. 278.
b^4. Hind wing with outer margin extremely produced.......... 23. HISTIA, p. 279.
b'. Fore wing with the cell short; veins 4 and 5 stalked; 6, 7, 8, and 9 stalked; hind wing with vein 6 absent ...... 24. CANERCES, p. 281.
b. The wings uniformly semi-diaphanous; fore wing with veins 4 and 5 stalked, and 7, 8, 9 stalked.
a'. Fore wing narrow and rounded at apex .... 25. PHILOPATOR, p. 281.
b'. Fore wing shorter and quadrate ...... 26. AGALOPE, p. 282.
c'. Fore wing long and quadrate.
a^2. Hind wing not produced into a tail.. 27. CHELURA, p. 283.
b^2. Hind wing produced into a tail .... 28. ELCYSMA, p. 284.

Genus **CALLIZYGÆNA.**

Callizygæna, *Feld. Reis. Nov., Het. Erk.* pls. 75–107, p. 2 (1875).

Type, *C. nivimacula*, Feld.
Range. The Peninsula of India and Ceylon.

Antennæ bipectinated in both sexes. Palpi short and porrect. Fore wing with veins 9 and 10 stalked. Hind wing with vein 6 given off from discocellulars. Abdomen of male with thick lateral tufts of hair. Shape as in *Zygæninæ*.

516. **Callizygæna nivimacula**, *Feld. Reis. Nov.* pl. 83, fig. 4; *C. & S.* no. 291.

Fig. 165.—*Callizygæna nivimacula*, ♂. 1/1.

♀. Black; collar, and 2nd, 3rd, and 6th segments of abdomen crimson above. Wings blackish fuscous; fore wing with a slight greenish tinge; a large white spot at end of cell.

Hab. Trincomali, Ceylon. *Exp.* 30 millim.

517. **Callizygæna auricincta**, *Swinh. Cat. Het. Mus. Oxon.* p. 62.

♂. Black; the shaft of antennæ, head, prothorax, and tegulæ metallic blue; collar crimson; abdomen with the 3rd, 4th, and last three segments golden above; the lateral tufts black. Fore wing irrorated with metallic-blue scales, especially near the base of costa; a large white spot at end of cell. Hind wing fuscous hyaline.

Hab. Nilgiris. *Exp.* 26 millim.

518. **Callizygæna gana**, *Swinh. Trans. Ent. Soc.* 1891, p. 133, pl. viii, fig. 12.

♂. Differs from *auricincta* in the lateral tufts of the abdomen being crimson.

Hab. Ganjam. *Exp.* 28 millim.

Genus TRYPANOPHORA.

Trypanophora, *Kollar, Hügel's Kaschmir*, iv, p. 457 (1848).

Type, *T. semihyalina*, Koll.

Range. China; India, Burma, and Ceylon.

Antennæ with the pectinations short; very short in female. Palpi minute and porrect. Fore wing with veins 7, 8, and 9 stalked, either 7 or 9 being given off furthest from the cell. Hind wing with vein 6 absent.

519. **Trypanophora semihyalina**, *Koll. Hügel's Kaschmir*, iv, p. 457, pl. 19, figs. 1–4; *Moore, Lep. E. I. Co.* ii, pl. xiv, fig. 6 (larva); *C. & S.* no. 306.

Trypanophora argyrospila, *Wlk. Cat.* xxxi, p. 126.
Syntomis humeralis, *Wlk. Cat.* vii, p. 1593.
Trypanophora atkinsoni, *Moore, Lep. Atk.* p. 15; *C. & S.* no. 305.
Syntomis glaucopoides, *Wlk. Cat.* xxxi, p. 69; *C. & S.* no. 279.

Blue-black; antennæ sometimes whitish towards the tips. Frons white in the Hongkong and some N. India specimens,

Fig. 166.—*Trypanophora semihyalina*, ♀. $\frac{1}{1}$.

yellow in the others. Tegulæ black in one Hongkong specimen, whitish in another; orange in some Indian and red in others.

Orange spots on pro- and metathorax, either or both of which may be absent. Abdomen: the 5th and 6th segments with orange bands; the anterior segments sometimes with orange lateral spots, which in some specimens form complete rather narrow bands. Fore wing with one or two subbasal hyaline streaks above the subcostal and one below the median nervure; in some specimens the base of wing is yellowish; the outer discal area hyaline, which varies in extent from filling the outer part of the cell and the interspaces beyond, leaving only the veins and margins black, to slight hyaline streaks between veins 2, 3, 4, and 10, 11, 12, the spots in the end of cell and the interspace below being replaced by ochreous. Hind wing with costal area pale ochreous; a black patch towards end of cell; all the interspaces below and beyond with hyaline streaks; the outer margin irregularly black. In the female the hyaline patch is sometimes as complete as in the male, sometimes reduced to three short streaks beyond the cell; the base of the wing being sometimes ochreous. Pectus with yellow spots.

In typical *semihyalina* the discal hyaline patches of the fore wing are large; the frons and tegulæ orange; the abdomen with only two bands: in *argyrospila* the frons is white, the tegulæ white or black, the abdomen with the bands on the proximal segments complete: in *humeralis* the discal patches are much reduced and sometimes almost absent, the tegulæ orange, and abdomen with only two bands; but none of these characters are locally constant.

Larva reddish brown, the tubercles dark brown; head and legs red, the anterior somites yellow at sides and below.

Hab. Hongkong; Kashmir; Kangra; Sikhim; Calcutta; E. Pegu. *Exp.*, ♂ 31–36, ♀ 38–50 millim.

520. **Trypanophora flavalis**, n. sp.

♀. Antennæ black, white at three-fourths from base; frons, collar, tegulæ, the vertex of thorax, and broad segmental band to the abdomen orange. Fore wing orange, the veins and margins black; the outer part of cell and the interspaces beyond hyaline, leaving a narrow orange band within the black margin. Hind wing orange; the outer margin black, expanding into a patch near anal angle; veins 2, 3, and 4 streaked with black.

Hab. Matelei, Burma (*Fea*). *Exp.* 43 millim. Type in Mus. Genova.

521. **Trypanophora taprobanes**, *Wlk. Cat.* ii, p. 435; *C. & S.* no. 307; *Moore, Lep. Ceyl.* ii, p. 40, pl. 95, fig. 8 (larva, 8 *a*).

Dark indigo-blue; an orange streak on metathorax: pectus crimson. Fore wing with a large discal hyaline patch filling the end of the cell and the interspaces above, beyond, and below it, and crossed by the black veins. Hind wing wholly blue.

Larva purple-brown; two dorsal and two lateral rows of seti-

ferous tubercles, the lower lateral tubercle of 1st somite long; lateral yellow blotches on 10th and 11th somites.

Hab. Ceylon. *Exp.*, ♂ 28, ♀ 44 millim.

Genus PHLEBOHECTA, nov.

Type, *P. fuscescens*, Moore.

Range. Sikhim; Burma.

Fore wing with veins 4 and 5 stalked; vein 6 absent, 8 and 9 stalked. Hind wing with vein 8 present. The wings rather narrow and apices rounded. Antennæ with very minute pectinations in the female. Mid and hind tibiæ with a minute terminal pair of spurs.

522. **Phlebohecta fuscescens**, *Moore, Lep. Atk.* p. 16; *C. & S.* no. 445; *Elw. P. Z. S.* 1890, p. 386, pl. xxxii, fig. 12.

♂. Fuscous; the collar pale red; the disk of hind wing below the cell paler.

Fig. 167.—*Phlebohecta fuscescens*, ♂. $\frac{1}{1}$.

♀ with the inner area of the hind wing below the cell yellowish white.

Hab. Sikhim, 3000 feet. *Exp.*, ♂ 29, ♀ 36 millim.

523. **Phlebohecta flavicosta**, *Elw. P. Z. S.* 1890, p. 386, pl. xxxii, fig. 1.

♀. Differs from *fuscescens* in the costal fascia of the fore wing being bright golden yellow; the costa, apex, and apical half of the outer margin of the hind wing golden yellow. A specimen from Bernardmyo has the margins of the fore and hind wing pale yellowish white and much narrower than in the typical Sikhim specimen.

Hab. Sikhim; Burma. *Exp.* 42–50 millim.

Genus SORITIA.

Soritia, *Wlk. Cat.* ii, p. 435 (1854).
Retina, *Wlk. Cat.* ii, p. 438 (1854).

Type, *S. leptalina*, Koll.

Range. China; the Himalayas; Assam; Burma; Malay Peninsula; Borneo.

Palpi minute. Antennæ very minutely pectinated in the female.

Fore wing with veins 4 and 5 stalked, 7, 8, and 9 stalked. Mid and hind tibiæ with minute terminal pairs of spurs.

524. **Soritia rubrivitta**, *Wlk. Cat.* ii, p. 439; *C. & S.* no. 440; *Butl. Ill. Het.* v, p. 25, pl. 84, fig. 4.

♀. Head, thorax, and abdomen greenish brown; collar crimson. Fore wing dark olive-green, with a broad crimson fascia from the base along the costa, then curving down to the outer angle. Hind wing dark brown.

Hab. Sikhim; Sibságar; Sylhet. *Exp.* 38 millim.

525. **Soritia leptalina**, *Koll. Hügel's Kaschmir*, p. 461; *C. & S.* no. 447.
Soritia sexpunctata, *Wlk. Cat.* ii, p. 432; *C. & S.* no. 449.
Heterusia octopunctata, *Mösch. Stettin. Ent. Zeit.* 1872, p. 344; *C. & S.* no. 379.
Heterusia pulchella, *Koll. Hügel's Kaschmir*, p. 461; *C. & S.* no. 380.
Eterusia triliturata, *Wlk. Cat.* xxxi, p. 119; *C. & S.* no. 387.
Beterusia cicada, *Feld. Reis. Nov.* pl. 83, fig. 8; *C. & S.* no. 369.
Heterusia flavomaculata, *Mösch. Stettin. Ent. Zeit.* 1872, p. 343; *C. & S.* no. 376.
Soritia olivascens, *Moore, Lep. Atk.* p. 16; *C. & S.* no. 448.

♂. Head, thorax, and abdomen black, the last sometimes with a blue shot; collar crimson; tegulæ yellow. Fore wing dark brown, with a greenish tinge; a yellow triangular patch occupying the whole basal area except the margins, this may be reduced to a narrow streak and four obliquely placed spots or to any intermediate state; a yellow spot beyond the end of the cell. Hind wing yellow, with the outer margin black, widest at apex; this may be reduced to spots beyond the cell and the apex alone black, or the darkness of the wing may be increased by a black suffusion along the veins and inner margin. The yellow on both wings may be either very pale or bright and dark.

Fig. 168.—*Soritia leptalina*, ♂.

♀. Head and collar crimson; thorax yellow, abdomen white with metallic blue bands: wings bright yellow, with a blue spot between veins 2 and 3, and another between veins 3 and 4 of the fore wing; hind wing with a blue spot between veins 3 and 4, and sometimes one between 4 and 5, these two forms being named *sexpunctata* and *octopunctata*. In other specimens the ground-colour is very pale yellow, the veins of the fore wing being bright yellow, and in others again there is also a bluish suffusion between

the nervules and along the inner margin of the fore wing, and the outer area of the hind wing is suffused with black, this being typical *leptalina* = *pulchella* = *trilriturata*.

Hab. Himalayas; Sylhet; Bernardmyo, Burma. *Exp.*, ♂ 32–40, ♀ 40–50 millim.

526. **Soritia shahama,** *Moore, P. Z. S.* 1865, p. 801; *C. & S.* no. 383; *Waterh. Aid,* ii, pl. 127, fig. 3.

♂. Differs from the dark form of *leptalina* in the collar not being crimson; the abdomen with lateral yellow bands; the postmedial band of four spots is white, as also the spot at end of cell of fore and hind wings. Underside: fore wing with white submarginal streaks; hind wing with the costal and apical areas white.

♀ with the postmedial band of white spots absent; the one at end of cell yellow. Hind wing with the basal area whitish.

Hab. Sikhim. *Exp.* 58 millim.

527. **Soritia viridivena,** n. sp.

♀. Head, thorax, abdomen, and legs black, metallic blue-green below. Fore wing black, with a broad yellow outwardly-oblique medial band; the veins green. Hind wing bright golden-yellow; the base black; the apex with a broad black border, continued as a narrowing line to the anal angle. Underside with exterior area shot with blue.

In this and the following species the stalk of veins 4 and 5 of the fore wing is short.

Hab. Sylhet; Nága Hills, 5000 feet, July (*Doherty*). *Exp.* 44 millim. Type in B. M.

528. **Soritia nigribasalis,** n. sp.

♀. Differs from *viridivena* in the band of the fore wing being narrow and placed further from the base; the basal area of the hind wing to near the end of cell and anal angle black, leaving a yellow band broadest at the costa, obsolescent towards anal angle.

Hab. Sikhim (*Möller*). *Exp.* 44 millim. Type in coll. Elwes.

529. **Soritia circinata,** *Herr.-Schäffer, Samml. aussereur. Schmett.* p. 57, figs. 156, 157; *C. & S.* no. 370.
Eterusia fasciata, *Wlk. Char. undescr. Het.* p. 5; *C. & S.* no. 375.

♂. Differs from *nigribasalis* in the abdomen being shot with brilliant blue. Hind wing black, with an apical yellow band, broad at the costa, narrowing to vein 1 *b*, with four black spots on it between the nervules and a narrow marginal black line.

Hab. Sikhim; Assam. *Exp.* 63 millim.

530. **Soritia obliquaria**, *Fabr. Mant. Ins.* ii, p. 194.
Eterusia transversa, *Wlk. Cat.* xxxi, p. 118.
Erasmia eusemoides, *Feld. Reis. Nov.* pl. 83, fig. 10.

Head and thorax brown, the former and antennæ suffused with metallic blue; abdomen ringed brown and white. Fore wing brown; a metallic blue speck at base; an oblique postmedial yellowish-white band from costa to vein 1 *b*. Hind wing brown at base and outer margin, the medial half orange; costa brown, expanding into a spot at middle. Underside: fore wing with a series of bluish-white marks before the band; blue streaks on the marginal veins; hind wing with some blue at base, on costal spot, and marginal nervules.

Hab. Mergui; Malacca; Borneo. *Exp.*, ♂ 62–76, ♀ 80 millim.

Genus PIDORUS.

Pidorus, *Wlk. Cat.* ii, p. 424 (1854).
Laurion, *Wlk. Cat.* ii, p. 426 (1854).

Type, *P. glaucopis*, Drury.

Range. Japan; China; E. Himalayas; Assam; Burma; Malacca; Borneo; Java.

The wings broader than in *Soritia*; veins 4 and 5 of the fore wing not stalked.

Sect. I. The branches of antennæ of female very minute.

531. **Pidorus circumdatus**, *Wlk. Cat.* xxxi, p. 121; *C. & S.* no. 371.

Head, thorax, and abdomen greenish black. Fore wing greenish black, with a golden-yellow band from near the base to the middle, its outer edge waved. Hind wing golden yellow; a marginal greenish-black band narrowing to anal angle. Underside with the outer margins shot with greenish blue.

Hab. Sikhim; Assam. *Exp.* 38 millim.

Sect. II. The branches of antennæ in female longer.

532. **Pidorus geminus**, *Wlk. Cat.* ii, p. 427; *C. & S.* no. 433.

Head and collar crimson; antennæ, thorax, abdomen, and fore wing very dark green, the last with a wide oblique ochreous band from the costa beyond the middle to the outer angle. Hind wing deep dark brown. Underside with the costa and outer margins of both wings shot with blue.

In some specimens the head is brown, and the band on fore wing white.

Hab. Hongkong; Sikhim; Sylhet; Moulmein; Cambodia; Borneo. *Exp.* 32–40 millim.

533. **Pidorus circe,** *Boisd., Herr.-Schäffer, Samml. aussereur. Schmett.* fig. 2; *C. & S.* no. 432.
Laurion metallica, *Wlk. Cat.* ii, p. 426.

Differs from *geminus* in the head and collar being green. Fore wing bronzy green; hind wing purplish brown, with an ochreous spot on the costa below the apex and greenish-blue border.
Hab. Khásis; Nágas; Cachar. *Exp.* 48 millim.

Fig. 169.—*Pidorus circe,* ♂. $\frac{1}{1}$.

534. **Pidorus albifascia,** *Moore, Lep. Atk.* p. 19; *C. & S.* no. 435.

♂. Uniform black. Fore wing with the veins greenish; a yellow spot on the costa, with an oblique white band from it to the outer angle. Hind wing with a yellow spot on the costa before the apex. Underside with the veins and margins suffused with blue.
Hab. Nágas, 3000 feet; Sylhet; Momeit, Burma, 2000 feet. *Exp.* 48 millim.

535. **Pidorus glaucopis,** *Drury, Ill. Exot. Ins.* ii, p. 11, pl. 6, fig. 4; *C. & S.* no. 441.
Pidorus atratus, *Butl. A. M. N. H.* (4) xx, 1877, p. 401.

Antennæ metallic blue or green; head crimson; thorax, abdomen, and legs black-brown; abdomen shot with blue. Fore wing black-brown, with an oblique white band rather variable in width from the costa beyond the middle to outer angle. Underside suffused with blue.
Hab. Japan; Sikhim; Bhutan; Nágas; Cachar; Sylhet. *Exp.*, ♂ 50–54, ♀ 50–60 millim.

536. **Pidorus miles,** *Butl. Ill. Het.* v, p. 25, pl. 84, fig. 3; *C. & S.* no. 434.

♂. Dark brown; a yellow band across the collar and tegulæ. Fore wing with a yellow fascia from the base, running below the costa to near the end of the cell, then bent down to near middle of outer margin; a yellow apical spot. Hind wing with a broad red fascia along the costa expanding into the end of the cell.
Hab. Sikhim; Bhutan. *Exp.* 32 millim.

Genus HETEROPAN.

Heteropan, *Wlk. Cat.* ii, p. 440 (1854).
Birtina, *Wlk. Cat.* xxxi, p. 125 (1864).

Type, *H. scintillans*, Wlk.
Range. Nágas; Ceylon; Burma; New Guinea; Fiji.
Palpi rather longer than in the preceding genera. Mid and hind tibiæ with no spurs. Wings short and quadrate. Fore wing with vein 6 given off from the upper angle of the cell; hind wing with veins 6 and 7 from the upper angle of cell.

SECT. I. The outer margin of fore wing much rounded.

537. **Heteropan scintillans**, *Wlk. Cat.* ii, p. 441; *C. & S.* no. 437; *Moore, Lep. Ceyl.* ii, pl. 96, fig. 3.

Fig. 170.—*Heteropan scintillans*, ♂. $\frac{1}{1}$.

♂. Antennæ and frons deep metallic blue. Head, thorax, abdomen, and wings lavender-blue. Fore wing with bluish silvery raised scales on a cupreous band along the outer margin.
Hab. Ceylon. *Exp.* 22 millim.

538. **Heteropan cupreatus**, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 10.

Differs from *scintillans* in the antennæ, head, thorax, and fore wings being uniform cupreous brown; the abdomen and hind wings deeper blue.
Hab. Pundaloya, Ceylon. *Exp.* 22 millim.

SECT. II. The outer margin of fore wing squarer.

539. **Heteropan flavimacula**, n. sp.

Uniform dark brown, with a large bright yellow patch on the fore wing from the costa before the apex to vein 4.
Hab. Momeit, Burma, 2000 feet, June (*Doherty*). *Exp.*, ♂ 22, ♀ 26 millim. Type in coll. Elwes.

540. **Heteropan ochreus**, *Elw. P. Z. S.* 1890, p. 385, pl. xxxiii, fig. 4.

Antennæ purplish black, the tips fulvous. Head black. Fore wings fulvous; the cilia black. Hind wings brighter fulvous, except the inner area. Underside bright fulvous.
Hab. Nága Hills, 6000 feet. *Exp.* 27 millim.

Genus ARBUDAS.

Arbudas, *Moore, Lep. Atk.* p. 19 (1879).

Type, *A. bicolor*, Moore.
Range. Sikhim.
Shape as in *Heteropan*; the palpi shorter. Fore wing with vein 6 given off below the angle of cell; vein 11 anastomosing with 12.

541. **Arbudas bicolor**, *Moore, Lep. Atk.* p. 20, pl. ii, fig. 19; *C. & S.* no. 477.

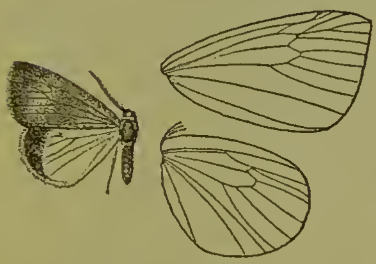

Fig. 171.
Arbudas bicolor, ♀. $\frac{1}{1}$.

♂. Antennæ, head, thorax, abdomen, and wings uniform fuscous, with a slight purple tinge; collar crimson. Underside paler; a whitish patch on disk of fore wing.

♀. The collar sometimes dark. Fore wing rather paler than in male, the patch on underside pure white and extending to the costa. Hind wing pure white, with a broad dark outer margin; cilia white.

Hab. Sikhim. *Exp.*, ♂ 22, ♀ 32 millim.

Genus HERPA.

Herpa, *Wlk. Cat.* ii, p. 441 (1854).

Type, *H. venosa*, Wlk.
Range. Sikhim; Khási and Nága Hills.
The branches of antennæ very long in the male. Mid and hind tibiæ with minute terminal pairs of spurs. The wings longer; fore wing with vein 7 given off further from the cell than 9; 11 not anastomosing with 12.

SECT. I. Fore wing with veins 4 and 5 not stalked.

542. **Herpa venosa**, *Wlk. Cat.* ii, p. 442; *C. & S.* no. 439.

Head and antennæ black; thorax ochreous, marked with black; abdomen ochreous, with segmental black bands. Wings primrose-yellow, with the veins and margins black.
Hab. Khásis. *Exp.* 46 millim.

Fig. 172.—*Herpa venosa*, ♂. $\frac{1}{1}$.

*543. **Herpa subhyalina,** *Moore, Lep. Atk.* p. 18; *C. & S.* no. 438.

Differs from *venosa* in the abdomen being greyish; the wings subhyaline ochreous; both wings with the costal border blackish hind wings with the veins and margins not black.

Hab. Sikhim. *Exp.* 60 millim.

SECT. II. Veins 4 and 5 of the fore wing stalked.

544. **Herpa primulina,** *Elwes.*
Herpa subhyalina, var. primulina, *Elw. P. Z. S.* 1890, p. 382.

Much brighter yellow than *subhyalina*; the costa of hind wing not blackish.

Hab. Nága Hills, 5000 feet, August. *Exp.* 58 millim.

Genus **PINTIA.**

Pintia, *Wlk. Cat.* ii. p. 280 (1854).

Type, *P. metachloros*, Wlk., from Java.

Range. Hongkong; N.E. and S. India; Burma; Andamans; Nicobars; Sumatra; Java.

Branches of antennæ of male not so long as in *Herpa*. Frons much produced; palpi short. Legs without spurs. Fore wing with the apex pointed, vein 11 anastomosing with 12. Hind wing with vein 6 from below the upper angle of cell.

SECT. I. Veins 6, 7, 8, and 9 of the fore wing stalked together.

545. **Pintia ferrea,** *Wlk. Cat.* ii. p. 431; *C. & S.* no. 392; *Butl. Ill. Het.* v, pl. 83, fig. 7.

Antennæ metallic blue; head with copper and green tints; thorax copper-red with green markings; abdomen dark green. Fore wing dark coppery red; the median and submedian nervures

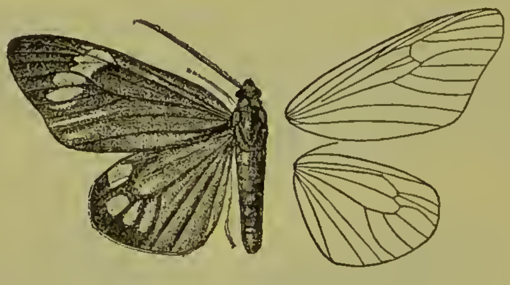

Fig. 173.—*Pintia ferrea*, ♂. 1/1.

streaked with green; a short whitish maculate oblique band beyond the upper angle of the cell, and two white spots between veins 3, 4, and 5. Hind wing blackish; the inner area below the cell suffused with green; four whitish spots very variable in size,

and sometimes obsolescent, in the interspaces beyond the cell; cilia white. Underside with the costa of fore wing streaked with green; a white streak in the interno-median interspace: hind wing with a white streak in the cell and three below it; a submarginal series of blue spots on both wings.

Hab. Hongkong; Sikhim; Sylhet; Cachar; Burma; Nicobars; Andamans. *Exp.* 46–56 millim.

546. **Pintia cyanea,** *Butl. A. M. N. H.* (5) xii, p. 160.

Differs from *ferrea* in the wings being without the whitish spots above; hind wing shot with brilliant metallic blue, abdomen with greenish blue.

Hab. Mergui; Sumatra. *Exp.* 46 millim.

SECT. II. Fore wing with vein 6 not stalked with 7.

547. **Pintia latipennis,** *Hmpsn. Ill. Het.* viii, p. 45, pl. cxxxix, fig. 22.

♂. Differs from *ferrea* in the antennæ being darker blue; thorax and fore wing uniform vinous red, the latter with the oblique band and two spots beyond the cell obsolescent; abdomen and hind wing uniform brown, the latter with one white spot beyond the cell, the lower spots being obsolete; cilia brown. Underside without the costal green streak to fore wing or blue submarginal spots. The wings broader.

Hab. Nilgiris, W. slopes, 3000 feet, Aug. *Exp.* 56 millim.

Genus **HETERUSIA.**

Eterusia, *Hope, Trans. Linn. Soc.* xviii. p. 445 (1841).
Devanica, *Moore, Trans. Ent. Soc.* 1884, p. 355.
Sephisa, *Moore, Lep. Ceyl.* ii, p. 41 (1883).

Type, *E. tricolor*, Hope.

Range. China; Himalayas; Assam; Sylhet; Burma; S. India; Ceylon; Cambodia; Java.

Fore wing with veins 6, 7, 8, and 9 stalked together; 11 not anastomosing with 12.

SECT. I. The outer margin of the fore wing nearly straight.

A. *The abdomen blue-green above.*

548. **Heterusia raja,** *Moore, Lep. E. I. Co.* p. 320, pl. viii. *a*, fig. 2; *C. & S.* no. 381.

♀. Head and thorax green; collar narrowly crimson; antennæ and abdomen metallic blue, the latter with a green tinge and yellow below. Fore wing bright green, with an outwardly-oblique yellow maculate band from the costa beyond the middle to near outer angle; the spots outwardly edged with black; the veins between them blue. Hind wing yellow; the veins bordered with black; a curved black band from the lower angle of cell to the

outer margin at vein 1 *b*; the outer margin black; the whole inner area from vein 1 *b* to the margin blue-green.

Hab. Sikhim. *Exp.* 65 millim.

B. *The abdomen black, shot with blue.*

549. **Heterusia alompra**, *Moore, Lep. Atk.* p. 16; *C. & S.* no. 368.
Eterusia urania, *Schaus, Ent. Amer.* 1890, p. 39.
Devanica submarginalis, *Swinh. Cat. Het. Mus. Oxon.*, ined.

Antennæ metallic blue-green; head and thorax green; abdomen shot with blue. Fore wing dark green, with an oblique yellow band from the costa beyond the middle to the inner margin near outer angle, some ovate black spots on each side of it, and the nervures between it and the black spots metallic blue. Hind wing black; the inner area below the median nervure shot with metallic blue; an apical band of metallic-blue spots decreasing from the apex to vein 2.

In typical *alompra* there is an oblique series of small yellow spots from the end of the cell of the hind wing to the outer margin at vein 1 *b*; this in *submarginalis* forms a complete broad band, but in the form *urania* is totally absent on the upperside.

Hab. Sikhim; Bhutan; Assam; Nágas; Burma; Cambodia. *Exp.*, ♂ 72, ♀ 62–86 millim.

C. *Abdomen yellow; the first segment black, shot with blue; males with segmental black bands above.*

550. **Heterusia lativitta**, *Moore, Lep. Atk.* p. 15; *C. & S.* no. 377.
Eterusia fasciata, *Mösch.* (*nec Walk.*), *Stettin. Ent. Zeit.* 1872, p. 340; *C. & S.* no. 375 (part.).

♂. Abdomen banded with black above; the basal yellow patch of fore wing wanting.

♀. Head, thorax, and first segment of abdomen black. Fore wing very dark green, with a basal pale yellow patch; a broad maculate band consisting of two irregularly superposed spots just before the middle; a small spot in the end of the cell, and five small sub-apical white spots. Hind wing rich blackish brown, with a yellow spot at the end of the cell, and two or three metallic blue spots in the interspaces between veins 2 to 5, which are streaked with blue. Underside with the veins streaked with blue in places on both wings. Abdomen with ventral black bands.

Hab. Sikhim; Khásis; Assam; Nágas; Sylhet. *Exp.* 70 millim.

551. **Heterusia tricolor**, *Hope, Trans. Linn. Soc.* xviii. 1841, p. 445, pl. 31, fig. 4; *C. & S.* no. 386.
Eterusia sublutea, *Wlk. Cat.* ii, p. 430: *C. & S.* no. 385.
Eterusia scintillans, *Herr.-Schäffer, Samml. aussereur. Schmett.* fig. 154.
Heterusia trimacula, *Mösch. Stettin. Ent. Zeit.* 1872, p. 342; *C. & S.* no. 388.

Differs from *lativitta* in the spots of the medial bands being small and well separated; the spot at the end of the cell and the submarginal series larger, the latter complete. Hind wing black

Fig. 174.—*Heterusia tricolor*, ♀. $\frac{1}{1}$.

at base; followed by a yellow band, wide on inner margin, where it reaches the anal angle; apical area black, with a large yellow spot at the end of the cell, and two to four blue submarginal spots, the two lower with yellow lunules inside them. Underside with the black areas largely shot with blue.

Hab. Sikhim; Sylhet; Nepal; Nágas; E. Pegu. *Exp.*, ♂ 60, ♀ 75 millim.

D. *The first two segments of abdomen black, no dorsal bands in male.*

552. **Heterusia edocla**, *Doubl. Zoologist*, ii, p. 468; *C. & S.* no. 374.
Heterusia dulcis, *Butl. Ill. Het.* v, p. 21, pl. 83, fig. 4; *C. & S.* no. 373.
Heterusia signata, *Mösch. Stettin. Ent. Zeit.* 1872, p. 341; *C. & S.* no. 384.

Differs from *lativitta* in the fore wing having the medial band broken up into 5 spots; the submarginal series complete, or sometimes almost entirely absent.

In the form *dulcis* there is a yellow band from the costa of the hind wing across the end of the cell, this being only represented in typical *edocla* by a small spot on the underside of costa.

Hab. Nepal; Sikhim; Assam; Nágas; Cachar. *Exp.* 75 millim.

553. **Heterusia magnifica**, *Butl. Trans. Ent. Soc.* 1879, p. 5; *id. Ill. Het.* v, pl. 83, fig. 2; *C. & S.* no. 378.

Differs from *edocla* in the fore wing being purple-brown, with a slight green tinge, the markings white; the medial band with blue on the veins where they cross it. Hind wing as in *tricolor*, except that the basal black patch is larger; the apical area largely shot with blue; the upper spots on it triple; the yellow of hind wing may be pale or bright.

Hab. Sikhim; Assam; Nágas; Sylhet; Cachar. *Exp.*, ♂ 66, ♀ 80 millim.

554. **Heterusia virescens,** *Butl. Ill. Het.* v, p. 21, pl. 83, fig. 3; *C. & S.* no. 389.

Differs from *magnifica* in the fore wing being dark green; the basal black area of the hind wing larger, reducing the width of the yellow band, which is very pale in colour. End of abdomen black in male.

Hab. Khandála; Nilgiris, 3000–6000 feet. *Exp.* 76 millim.

555. **Heterusia cingala,** *Moore, A. M. N. H.* (4) xx, p. 343; *id. Lep. Ceyl.* ii, p. 41, pl. 96, fig. 1; *C. & S.* no. 391.

Fore wing with the basal white patch and medial band actually larger than in *virescens,* and comparatively much larger, the latter placed nearer the base and not broken up into spots; the submarginal spots larger. Hind wing with the pale yellow band broader; the subapical spots absent in males.

Larva brown, with three lateral and two dorsal series of warts; from the former long, from the latter short hairs arise.

Hab. Ceylon. *Exp.* 55 millim.

556. **Heterusia ædea,** *Linn. Syst. Nat.* i, p. 757; *C. & S.* no. 367.

Differs from *virescens* in the spots of the medial band of the fore wing being longer; the cell spot and submarginal spots of both wings much larger. Hind wing with the pale yellow band much broader.

Hab. China; Sylhet. *Exp.* 65 millim.

Sect. II. The outer margin of the fore wing more excised.

557. **Heterusia drataraja,** *Moore, Lep. E. I. Co.* ii, p. 321, pl. viii *a*, fig. 3.

♂. Frons white. Head, thorax, and abdomen black; thorax, with the collar, tegulæ, and two longitudinal streaks, fulvous; abdomen with fulvous segmental bands. Fore wing fulvous, with the following black streaks, two below the costa, one at the beginning and two at the end of the cell, two in the median and two in the interno-median interspace, one along the inner margin, and one in each interspace beyond the cell; a marginal black band crossed by the fulvous veins and widest at the apex. Hind wing fulvous, with the veins broadly edged with black; a broad black band along outer margin.

Hab. Java; Mergui. *Exp.* 40 millim.

Genus MILLERIA.

Milleria, *Herr.-Schäffer, Samml. aussereur. Schmett.* p. 78 (1858).

Type, *M. virginalis,* H.-S.

Range. N.E. India; Burma; Malacca; Singapore; Borneo.

Frons produced. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing with the outer margin not excised; vein 3 from before the end of the cell, 4 and 5 on a long stalk, 7, 8, and 9 stalked. Hind wing broad and rounded.

558. **Milleria virginalis**, *Herr.-Schäffer, Samml. aussereur. Schmett.* fig. 4; *C. & S.* no. 425.

Cyclosia fuliginosa, *Wlk. Cat.* ii, p. 418; *C. & S.* no. 436; *Butl. Ill. Het.* v, pl. 83, fig. 6.

Cyclosia subcyanescens, *Wlk. Cat.* ii, p. 417.

♂. Head and thorax blackish; collar crimson; abdomen pale with fuscous bands. Fore wing cupreous brown, with white streaks in the interspaces, suffused with fuscous and consisting of a series of long streaks towards the base, and short streaks towards the outer margin. Hind wing white, with a broad black band from the apex to vein 2, enclosing a white spot in each interspace; the median nervure and nervules blue; the inner area yellow. Underside with the veins of both wings blue; hind wing more suffused with yellow.

Fig. 175.—*Milleria virginalis*, ♀. ¹⁄₁.

♀. Whiter, the fuscous on fore wing reduced to streaks along the veins and on the hind wing to a line on the outer margin, and a band across the end of the cell, which then bends outwards and becomes submarginal.

The variety *fuliginosa* has the abdomen and both wings entirely suffused with purplish black, so that only faint traces of the spots and streaks appear.

Hab. Sikhim; Sylhet; Burma. *Exp.*, ♂ 62, ♀ 76 millim.

559. **Milleria cyanivena**, n. sp.

♂. Differs from *virginalis* form *fuliginosa* in the veins of both wings being shot with greenish blue, the fore wing slightly, the hind wing and underside prominently; the discal spots of both wings absent on upper and under sides; the submarginal series pure white, large, and prominent.

Hab. Bernardmyo, Burma (*Doherty*). *Exp.* 70 millim. Type in coll. Elwes.

560. **Milleria hamiltoni**, *Swinh. Trans. Ent. Soc.* 1891, p. 475.

♀. Differs from *virginalis* in the collar being blue, and only the neck crimson; abdomen blue above. Fore wing green; pale yellow streaks on inner margin, veins 1 *b* and *c*, two in middle of cell, two above and two below, two in end of cell, a series between the nervules beyond, and a submarginal series. Hind wing pale yellow, the inner area bright yellow, the veins beyond the cell and apical margin blue. Underside similar, the metallic blue more brilliant.

Hab. Khási Hills. *Exp.* 75 millim.

561. **Milleria cardinalis**, *Moore, Lep. Atk.* p. 18; *C. & S.* no. 421.

♂. Differs from *virginalis* form *fuliginosa* in the frons being crimson; fore wing with the base and a waved subbasal band fuscous; the apical half white; the veins and outer margin fuscous. Hind wing yellowish, suffused with fuscous, the inner margin brighter yellow; the discocellulars streaked with blue; outer margin broadly white, crossed by the black veins.

Hab. Sikhim. *Exp.* 37 millim.

Genus **CHALCOSIA.**

Chalcosia, *Hübn. Verz.* p. 173 (1818).

Type, *C. thallo*, Linn.

Range. China; throughout India; Ceylon; Burma; Malacca; Sumatra; Java; Borneo.

Fore wing with veins 4 and 5 from cell or on a short stalk. Legs without spurs.

SECT. I. Veins 4 and 5 of the fore wing not stalked; the veinlet in the cell not forked.

562. **Chalcosia griseifusa**, n. sp.

♀. Head, thorax, abdomen, and fore wing uniform dark blue-grey. Hind wing with the basal half yellowish white, suffused with blue-grey towards the costa—the Malacca and Singapore specimens being more suffused than the one from Pegu; outer area fuscous, widest at apex, narrow at anal angle. Underside with a whitish patch on the inner margin of the fore wing below the cell; a submarginal series of whitish spots to both wings. Hind wing with the area below the cell bright yellow, more restricted in the Singapore specimen than in those from Malacca and Pegu.

Allied to *ficta*, Wlk., from Borneo.

Hab. E. Pegu; Malacca; Singapore. *Exp.* 52 millim. Type in B. M.

563. **Chalcosia idæoides,** *Herr.-Schäffer, Samml. aussereur. Schmett.* p. 78, pl. i, fig. 6.
Chalcosia albata, *Moore, P. Z. S.* 1879, p. 390; *C. & S.* no. 408.
Chalcosia pectinicornis, *Wlk. Cat.* ii, p. 420 (*nec Linn.*); *C. & S.* no. 411 (part.).

Antennæ metallic blue; frons blue; vertex of head black; head and collar crimson, the latter with two blue spots; thorax and abdomen blue-green. Fore wing with the basal half blue-green, sometimes white, leaving two medial spots, the median vein, and veins 1 *b* and *c* where they cross it whitish; this blue-green area terminates in three black spots, one in the cell and two below it, and is followed by a broad white band from the centre of the costa to near the outer angle; apical and marginal areas black, the veins metallic green; a subapical band of white spots in the interspaces. Hind wing pure white, with a black apical marginal band crossed by the metallic blue veins.

Hab. N.W. Himalayas; Nepal; Assam. *Exp.*, ♂ 60–68, ♀ 68 millim.

564. **Chalcosia argentata,** *Moore, Lep. Atk.* p. 17; *C. & S.* no. 409.
Chalcosia diana, *Butl. P. Z. S.* 1877, p. 815.

Differs from *idæoides* in the hind wing being pale yellow; the marginal band sometimes entirely shot with blue; the fore wing sometimes has the basal area blue-green, sometimes white as in *idæoides*.

Hab. Formosa; N.W. and E. Himalayas; Khásis. *Exp.*, ♂ 60, ♀ 72 millim.

565. **Chalcosia adalifa,** *Doubl. A. M. N. H.* xix. 1847, p. 76; *C. & S.* no. 406; *Butl. Ill. Het.* v, pl. 83. fig. 5.

♀. Differs from *argentata* in the blue-green patch below the cell of the fore wing being absent and replaced by three blue spots nearer the outer margin, two in the interno-median interspace, and one between veins 2 and 3. Underside of hind wing bright yellow, except the costa, apex, and apical part of margin.

Hab. Khási Hills. *Exp.* 64 millim.

566. **Chalcosia myrrhina,** *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 14.

♂. Differs from *argentata* in the white of the fore wing not being silvery; the streak from the base being along the costa; the patches in and below the cell being joined and shot with copper; the apical area purplish coppery, with the spots of the subapical band small. Hind wing uniform pale yellow, with two black subapical spots.

Hab. Pundaloya, Ceylon. *Exp.* 40 millim.

SECT. II. The fore wing longer; veins 4 and 5 stalked; and the veinlet in the cell generally forked.

567. **Chalcosia affinis,** *Guér. Voy. Deless. Hist. Nat.* p. 86, pl. 24, fig. 2; *C. & S.* no. 407; *Moore, Lep. Ceyl.* ii, pl. 98, fig. 2.

Differs from *myrrhina* in the whole basal half of the fore wing being metallic green, sometimes with a bronzy tint, and with black marks before the pale band; black streaks in the interspaces of the apical area. Hind wing with the apex black shot with blue.

Hab. Western Ghâts; Nilgiris; Ceylon. *Exp.* 50 millim.

568. **Chalcosia corusca,** *Boisd. Herr.-Schäffer, Samml. aussereur. Schmett.* pl. i, fig. 1; *C. & S.* no. 410.
Chalcosia zuleika, *Wlk. Cat.* ii, p. 423; *C. & S.* no. 416.

Differs from *affinis* in the basal area of the fore wing being golden green, traversed by an orange band bordered by blue-black on each side, this basal area terminating in a blue-black edge; the subapical spots obsolete. Hind wing with a larger apical blue-black patch.

The hind wing is sometimes pure white.

Hab. Sikhim; Khásis; Assam. *Exp.*, ♂ 50, ♀ 60 millim.

569. **Chalcosia thallo,** *Linn. Syst. Nat.* i, p. 756.
Chalcosia pectinicornis, *Linn. Syst. Nat.* i, p. 807; *C. & S.* no. 411.
Chalcosia tiberina, *Cram. Pap. Exot.* i, p. 52, pl. 32 C, D.
Chalcosia quadrifasciata, *Moore, Lep. Ceyl.* ii, p. 45, pl. 96, fig. 5; *C. & S.* no. 413.
Chalcosia venosa, *Wlk. Cat.* ii, p. 422; *Moore, Lep. Ceyl.* ii, pl. 97, figs. 2, 2 *a*; *C. & S.* no. 405.
Chalcosia similata, *Moore, Lep. Ceyl.* ii, p. 45, pl. 97, figs. 3, 3 *a*; *C. & S.* no. 414.
Milleria zehma, *Boisd. Herr.-Schäffer, Samml. aussereur. Schmett.* p. 78, pl. i, fig. 3; *C. & S.* no. 415.

Differs from *affinis* in being bluer. The fore wing may have the basal area entirely blue-green with black spots, or there may be a large white or pale yellow patch below the cell and along the inner margin; the median band is white or pale yellow, and broad and irregular, or reduced to a series of irregularly placed spots; the veins of the apical area are more narrowly green than in *affnis*; the subapical spots are sometimes prominent, sometimes completely obsolete. Hind wing white or pale yellow, with a black irregular marginal border shot with blue, which colour sometimes extends up below the cell to the base, reducing the white area to a patch beyond the cell; sometimes the blue-black colour is entirely wanting, except for a small subapical spot, and all the intermediate stages seem to occur irrespective of locality.

Pectinicornis is the darkest form, with the base of fore wing

and most of hind wing dark, in *thallo* the hind wing is white with a black marginal band, in *tiberina* the marginal band of the hind wing is narrower—these being the Chinese and N. Indian forms; in the Ceylon form *quadrifasciata*, from sea-level, the

Fig. 176.—*Chalcosia thallo*, ♂. $\frac{1}{1}$.

white basal patch to the fore wing appears in combination with a dark hind wing; in *venosa*, from the hills, the hind wing also is mostly pale; in *similata* the pale band of the fore wing is wider, and the dark area of the hind wing further reduced.

Hab. China; N. India; Ceylon. *Exp.* 50–60 millim.

570. **Chalcosia pretiosa**, *Wlk. Cat.* xxxi, p. 116; *C. & S.* no. 412; *Moore, Lep. Ceyl.* ii, pl. 96, fig. 4.

Chalcosia pretiosa, *var.* albina, *Hmpsn. Ill. Het.* ix, ined., pl. 157, fig. 5.

♂. Fore wing as in *affinis*, except that the white band is usually narrower and the subapical spots smaller; the abdomen and hind wing brilliant metallic blue.

In the form *albina* there is sometimes a white basal patch to the fore wing, and the hind wing is white, with the base and outer margin only metallic blue.

Hab. Ceylon. *Exp.* 42 millim.

571. **Chalcosia distincta**, *Guér. Voy. Deless. Hist. Nat.* p. 85, pl. 24, fig. 3; *C. & S.* no. 372.

Antennæ blue; head and abdomen orange; thorax grey, striped with blue. Fore wing grey, with the following series of blue-black spots in the interspaces—one series antemedial, three of the spots running back as streaks to the base; the others postmedial and submarginal, which join below the cell and are continued as one series; a marginal series. Hind wing white, with a black marginal band which occupies half the wing at the costa, and narrows to a point at the anal angle.

Hab. ? Assam; Mergui; Perak; Borneo; Sumatra; Java. *Exp.* 42–50 millim.

Genus CORMA.

Corma, *Wlk. Cat.* xxxi, p. 124 (1864).
Codane, *Moore, Lep. Atk.* p. 17 (1879).

Type, *C. obscurata*, Wlk., from Cambodia.

Range. N.E. India; Burma; Cambodia; Sumatra.

Hind wing with veins 4 and 5 stalked; fore wing with the veinlet in the cell of fore wing not forked, 4 and 5, and 7, 8, and 9 stalked, or 9 from cell.

572. **Corma zenotea**, *Wlk. Cat.* ii. p. 425; *C. & S.* no. 444.
Corma spoliata, *Wlk. Cat.* xxxi, p. 125.

Antennæ, head, and thorax dark greenish black; abdomen yellow, with black lateral spots and the tip black. Fore wing with

Fig. 177.—*Corma zenotea*, ♀. 1/1.

a fuscous band along the basal half of the costa; a spot at middle of cell and one on vein 1 *c*; postmedial and marginal maculate bands which join towards outer angle. Hind wing white, with a fuscous spot on the costa at end of cell, and a maculate apical band.

Hab. Khásis; Karen Hills; Moulmein; Siam. *Exp.*, ♂ 40, ♀ 46 millim.

573. **Corma maculata**, n. sp.

♀. Differs from *zenotea* in the collar being yellow. Fore wing with the basal area fuscous, except at inner margin; the spot in the cell much larger; the spots below the cell four in number and much larger, as are the apical and marginal markings. Hind wing with the fuscous spot in the cell obsolescent, but large on underside, on which side also a streak from the costa near the end of cell is present; a large patch below vein 2; spots between veins 2 and 3, and 3 and 4; marginal markings large.

Hab. Chin Hills, W. Burma (*Watson*). *Exp.* 56 millim. Type in B. M.

574. **Corma zelica**, *Doubl. A. M. N. H.* (1) xix, p. 76, pl. 7, fig. 3; *C. & S.* no. 443.
Codane neoterica, *Swinh. Trans. Ent. Soc.* 1890, p. 177.
Codane leucomelas, *Moore, J. A. S. B.* lv. pt. 2, p. 97; *C. & S.* no. 442.

♂. Differs from *zenotea* in the abdomen having segmental blue bands above. Fore wing with an oblique broad medial bluish-

black band followed by a white one; the apical and marginal areas bluish black, with a series of white subapical spots and, in some specimens, the apex white. Hind wing white, with the base suffused with fuscous and a broad marginal fuscous band narrowing to anal angle.

♀ with the base of the hind wing not suffused with fuscous; the abdomen whitish yellow, with the lateral spots, but no bands. In one specimen from E. Pegu the median dark band of the fore wing is reduced to a series of spots.

The spots forming the medial black band vary much in size.

Hab. Sylhet; E. Pegu; Moulmein. *Exp.*, ♂ 48, ♀ 54 millim.

Genus **CYCLOSIA.**

Cyclosia, *Hübn. Verz.* p. 177 (1818).
Klaboana, *Moore, P. Z. S.* 1879, p. 393.

Type, *C. panthona*, Cram.

Range. China; N.E. and S. India; Burma; Andamans; Nicobars; Java.

Fore wings with veins 4 and 5 from the angle of the cell, 6 from angle of cell or stalked with 7, 8, and 9; 11 anastomosing with 12; the veinlet in the cell forked.

A. *The abdomen banded blue and white.*

575. **Cyclosia nigrescens**, *Moore, P. Z. S.* 1877, p. 600; *C. & S.* no. 422.

Antennæ, head, and thorax metallic blue, the last two marked with white. Fore wing black, with the costa blue; a pale yellow streak below the costa, two in the cell, three below it, and four beyond the cell, the upper one trifid. Hind wing yellow, with a broad black marginal band; the median nervure and nervules streaked with black. Underside with a submarginal series of blue spots to both wings.

Hab. Andamans; Burma. *Exp.* 74 millim.

576. **Cyclosia parvula**, *Butl. A. M. N. H.* (5) xii, p. 160; *C. & S.* no. 420.

Differs from *nigrescens* in having a submarginal series of small yellow spots to both wings.

Hab. Burma; Andamans; Nicobars. *Exp.* 52 millim.

577. **Cyclosia papilionaris**, *Drury, Ill. Exot. Ins.* ii, p. 4, pl. 2, fig. 4; *C. & S.* no. 419.
Phalæna venaria, *Fabr. Ent. Syst.* iii, 2. p. 156.

Differs from *parvula* in the black markings of the fore wing being more extensive, so that the streaks and spots are reduced in

size. Hind wing with the marginal black border wider, and in some specimens of the same width at anal angle as at apex; in a Javan specimen all the veins are bordered with black. In some specimens the colour of the markings is almost white.

Hab. China; Sikhim; Khásis; Burma; Mergui; Java. *Exp.* 70 millim.

Fig. 178.—*Cyclosia papilionaris*, ♀. 1/1.

B. *The abdomen blue above.*

578. **Cyclosia australinda**, *Hmpsn. Ill. Het.* viii, p. 45, pl. cxxxix, fig. 23.

♀. Differs from *papilionaris* in the veins crossing the black band of the hind wing being streaked with metallic blue.

Hab. Nilgiris; Travancore. *Exp.* 70 millim.

C. *The abdomen entirely blue-green.*

579. **Cyclosia panthona**, *Cram. Pap. Exot.* iv, p. 68, pl. 322 c; *C. & S.* no. 423; *Moore, Lep. Ceyl.* ii, p. 44, pl. 97, figs. 1, 1 *a*, 1 *b*.

Head, thorax, and abdomen without any white markings. Fore wing dull brown, with a greenish tinge. Hind wing purplish brown; both wings with a submarginal series of large white spots in the interspaces, which are furthest from the margin at the apex of the fore wing; in some Burmese specimens those towards the anal angle of the hind wing are wanting.

Larva pale greenish yellow, the first two and last two somites reddish; three lateral and three dorsal series of warts, which are black centred with white; from the former arise long hairs, from the latter short.

Pupa in a pale reddish cocoon.

Hab. Hong Kong; Sikhim; Assam; Cachar; Khásis; Burma; Mergui; Malacca; Siam; Ceylon. *Exp.* ♂ 40–60, ♀ 60 millim.

Genus POMPELON.

Pompelon, *Wlk. Cat.* ii, p. 413 (1854).

Type, *P. marginata*, H.-S., from Java.
Range. Burma; Penang; Java; Celebes.

Mid and hind tibiæ with minute terminal pairs of spurs. Wings broad, with the apex of the fore wing very much rounded. Vein 6 from below angle of cell, 7, 8, and 9 stalked; vein 11 of the fore wing anastomosing with 12.

This genus mimics the blue *Euplœas*.

580. **Pompelon valentula,** *Swinh. P. Z. S.* 1889, p. 401.

♀. Head, thorax, and abdomen black-brown; pectus and abdomen below crimson, the latter with a pair of lateral segmental spots. Wings black-brown; fore wing with the costa and apex narrowly metallic blue; hind wing with a large metallic-blue apical patch; the outer margin greyish, which last is the only character in which it differs from *marginata*, Guér., from Penang. Underside of fore wing with a large yellow spot in the upper end of the cell, and the veins enclosing the cell streaked with metallic blue.

Hab. Burma. *Exp.* 78 millim.

581. **Pompelon subcyanea,** *Swinh. Cat. Het. Mus. Oxon.* p. 72.

Differs from *valentula* in the collar being blue, the apical blue patch to the fore wing being much larger, and extending down the

Fig. 179.—*Pompelon subcyanea*, ♂. $\frac{1}{1}$.

outer margin nearly to the outer angle, and inwards along all the nervules and median nervure; the costal blue streak wider. Hind wing without the grey margin. Underside with the veins and apices of both wings more or less suffused with blue.

Hab. Eastern Pegu, 1000 feet, April; Singapore; Borneo. *Exp.* ♂ 66, ♀ 84 millim.

Genus AMESIA.

Amesia, *Duncan, Nat. Libr., Ent.* vii. p. 93 (1841).

Type, *A. sanguiflua*, Drury.

Range. N.E. India; Burma; Malacca; Borneo; Java.

Claspers in male very much enlarged; branches of antennæ short; frons very much produced. Fore wing with the apex and outer margin rather square; veins 7, 8, and 9 stalked.

582. **Amesia sanguiflua**, *Drury, Ill. Exot. Ins.* ii, p. 35, pl. 20, figs. 1, 2; *C. & S.* no. 402.

Antennæ blue; head, thorax, and abdomen black, marked with metallic blue or green. Fore wing black, with some bluish subbasal marks; five irregularly placed yellow spots near the base; the veins broadly edged with vinous red from just before the middle of the wing to near outer margin; four small white spots below the

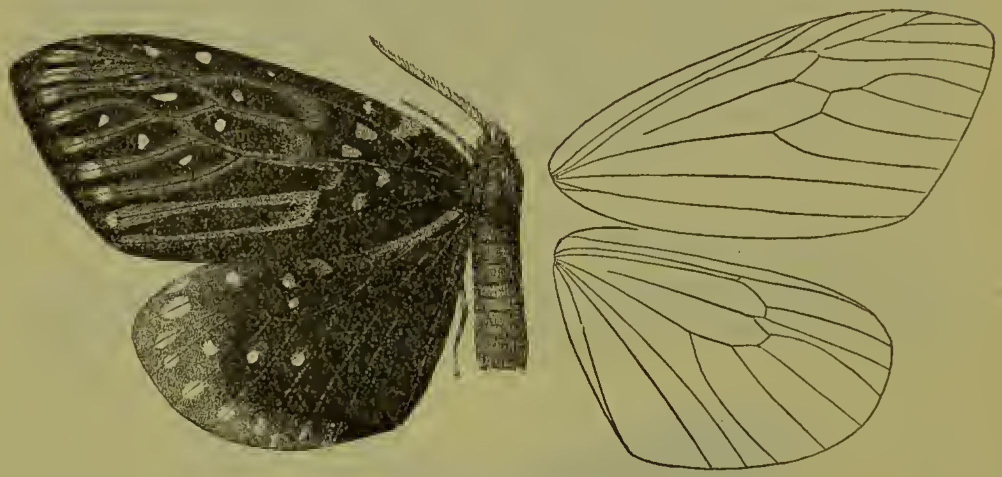

Fig. 180.—*Amesia sanguiflua*, ♂. $\frac{1}{1}$.

costa, two in the cell and five beyond; a submarginal series of white spots. Hind wing black, with a broad brilliant blue apical marginal band narrowing to anal angle; two small white spots in the cell on a brilliant blue ground and four beyond. Underside with the white spots larger, more numerous, and all on blue grounds; a yellow spot in cell of hind wing in addition to those on fore wing.

Hab. Sikhim; Khásis; Sylhet; Shillong; Burma. *Exp.* 100–110 millim.

583. **Amesia aliris**, *Doubl. A. M. N. H.* (1) xix. p. 74; *C. & S.* no. 400.

Differs from *sanguiflua* in the fore wing being without the vinous edges to the veins, and the spots being reddish orange instead of yellow.

A female from the Karen Hills has the anal area of hind wing white.

Hab. Sikhim: Assam; Nágas; Sylhet; Karen Hills. *Exp.*, ♂ ♀, 86–92 millim.

584. **Amesia hyala**, *Druce, P. Z. S.* 1885, p. 518; *Waterh. Aid*, ii, pl. 172, fig. 3.

Differs from *aliris* in the thorax having four white instead of blue dots; wings uniform brown, with the veins towards outer margin more or less outlined with white. Fore wing with a white dot at base; eight white dots beyond the cell between the nervules arranged in three series. Hind wing with two blue spots in the cell, one below it; four dots beyond the cell, the two upper ones white. Underside with the blue and white spots larger; additional blue spots below the costa and in and below the cell of the fore wing.

Hab. Sikhim; Borneo. *Exp.* 102 millim.

Genus ERASMIA.

Erasmia, *Hope, Trans. Linn. Soc.* xviii, p. 446 (1841).

Type, *E. pulchella*, Hope.

Range. China; Formosa; N.E. India.

Fore wing with veins 4 and 5 stalked and much curved; 7, 8, and 9 stalked.

585. **Erasmia pulchella**, *Hope, Trans. Linn. Soc.* xviii, p. 446, pl. xxxi, fig. 5; *C. & S.* no. 454.

Antennæ, head, and thorax metallic blue-green; abdomen whitish, more or less suffused with green. Fore wing black; the base suffused with metallic blue-green; an orange-red irregular oblique antemedial band; a similar metallic blue-green medial band;

Fig. 181.—*Erasmia pulchella*, ♂. $\frac{1}{1}$.

a postmedial maculate band of irregularly placed white spots, edged with green; two subapical white spots; veins of the outer area blue-green. Hind wing pale yellow; the base and a patch on the costa blue-green; an apical marginal black band crossed by the blue-green veins.

The Tibet race has less blue on the fore wing, and the marginal band of hind wing wider.

Hab. Sikhim; Assam; Nágas; Sylhet. *Exp.*, ♂ 80, ♀ 90 millim.

Genus CAMPYLOTES.

Campylotes, *Westw. Royle's Ill. Himal.* p. liii (1839).

Type, *C. histrionicus*, Westw.

Range. Tibet; Himalayas; Assam Hills.

Legs with the spurs extremely minute. Frons hardly produced. Fore wing with veins 3, 4, and 5 stalked together; 10 stalked with 7, 8, and 9; veins 2 to 10 all much curved. Hind wing with veins 4 and 5 stalked; veins 2 to 5 much curved.

586. **Campylotes histrionicus**, *Westw. Royle's Ill. Himal.* p. liii, pl. 10, fig. 1; *C. & S.* no. 456.

Campylotes histrionicus, *var.* altissima, *Elw. P. Z. S.* 1890, p. 384, pl. xxxiii, fig. 1.

Campylotes sikkimensis, *Elw. P. Z. S.* 1890, p. 384, pl. xxxiii, fig. 2.

Head, thorax, and abdomen blue-black; tegulæ yellow; pectus spotted with yellow; abdomen banded with yellow below. Fore wing blue-black, with two long red streaks below the costa; two in the cell, the upper red, the lower red and yellow; three yellow streaks below the cell; a red spot between veins 2 and 3; a white spot in the end of the cell; a series of six beyond and two sub-apical spots. Hind wing blue-black, with a red streak below the

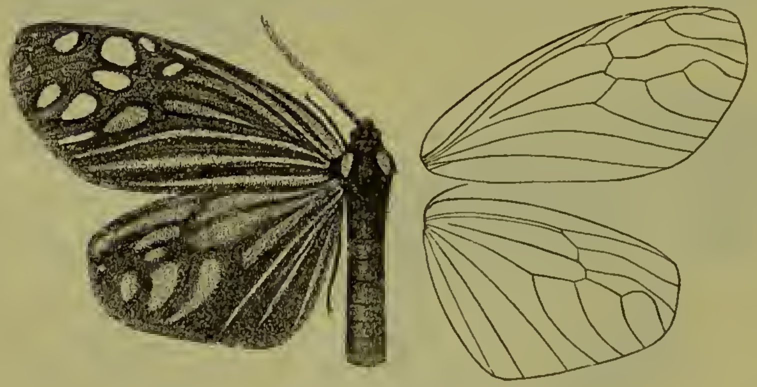

Fig. 182.—*Campylotes histrionicus*, ♂. 1/1.

costa; two in the cell, and four below, of which the upper one is red, the next red and yellow, and the other two yellow; a series of five red and yellow streaks beyond the cell, and a red and yellow spot between veins 4 and 5.

In the form *altissima* the spot in the cell of the fore wing and the one on the costa above are yellow, also the spots between veins 3 and 4, and 4 and 5. *Exp.*, 51–56 millim.

In the form *sikkimensis* (*exp.*, ♂ 44, ♀ 62 millim.) all the spots towards the apex of the fore wing are yellow, and the collar is yellow in the female. These differences are perfectly constant in a large number of specimens.

In a var. of *histrionicus* from the Khásis the whole of the red markings are turned to orange.

Hab. Throughout the Himalayas; Khásis. *Exp.* 80 millim.

587. **Campylotes desgodinsi**, *Oberth. Et. Ent.* livr. ix, p. 18, pl. ii, fig. 10.

Campylotes desgodinsi, *var.* splendida, *Elw. P. Z. S.* 1890, p. 384, pl. xxxiii, fig. 3.

♀. Differs from the form *sikkimensis* of *histrionicus* in having the tegulæ and collar black.

In the form *splendida*, from the Nága Hills, besides the size being greater, the coloration is much brighter and the ground-colour blue-black not greenish.

Hab. Tibet. *Exp.* 61 millim.—Var. *splendida.* *Hab.* Nágas. *Exp.* 78 millim.

588. **Campylotes atkinsoni**, *Moore, Lep. Atk.* p. 17; *C. & S.* no. 455; *Waterh. Aid*, ii, pl. 92.

With no yellow on thorax or abdomen. Wings shot with green. Fore wing with two red streaks below the costa; two in the cell and three obsolescent streaks below; a red streak between veins 2 and 3; a series of four white spots beyond the cell and two subapical white spots. Hind wing shot with green; all the red markings obsolescent except the spots in the interspaces between veins 2 to 5.

Underside with the red streaks of the hind wing well developed on the costal half of the wing; the inner area of both wings rather bare and shining.

Hab. Sikhim. *Exp.* 72 millim.

Genus CADPHISES.

Cadphises, *Moore, P. Z. S.* 1865, p. 800.

Type, *C. maculata*, Moore.

Range. Sikhim; Khásis; Nágas.

Wings broad. Mid and hind tibiæ with short terminal pairs of spurs. Fore wing with veins 4 and 5 stalked and curved, vein 10 stalked with 7, 8, and 9, which are all curved.

589. **Cadphises maculata**, *Moore, P. Z. S.* 1865, p. 801, pl. 42, fig. 7; *C. & S.* no. 361.

Antennæ, head, thorax, and abdomen purplish black, spotted with

white. Wings purplish black, with numerous small white spots. Hind wing bright yellow from the inner margin to vein 1 *b*.

Hab. Sikhim; Khásis. *Exp.* 70–90 millim.

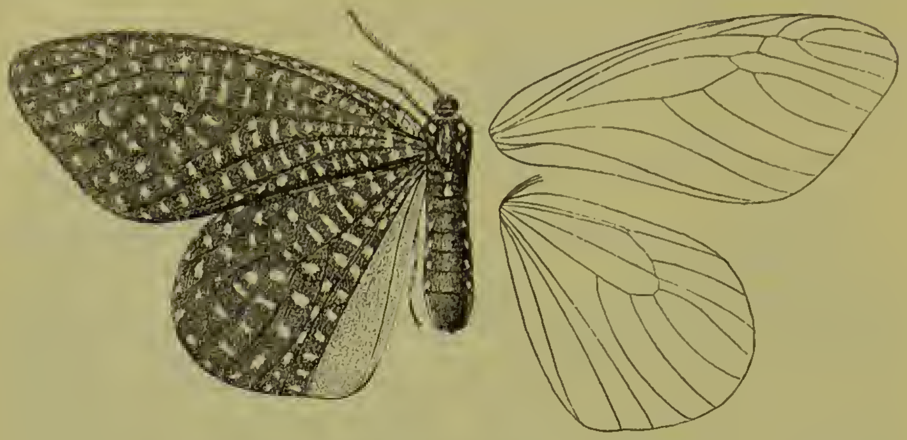

Fig. 183.—*Cadphises maculata*, ♀. 1/1.

590. **Cadphises moorei**, *Butl. P. Z. S.* 1875, p. 392; *C. & S.* no. 362.

♀. Differs from *maculata* in the inner margin of the hind wing being purplish black, spotted with white, similar to the rest of the wing.

This may prove to be a variety of *maculata*, as some specimens have a tendency to be intermediate.

Hab. Sikhim; Khásis; Nágas. *Exp.* 70–88 millim.

Genus ISBARTA.

Isbarta, *Wlk. Cat.* vii, p. 1672 (1856).

Type, *I. glauca*, Wlk., from Sumatra.

Range. Bhutan; Assam Hills; Burma; Borneo; Sumatra; Celebes.

Fore wing with vein 6 stalked with 7, 8, and 9, all being much curved; 10 bent upwards and touching 12; 11 anastomosing with 12; numerous veinlets from 12 to the costa.

591. **Isbarta binghami**, *Butl. A. M. N. H.* (5) x, 1882, p. 374; *C. & S.* no. 417.

♀. Antennæ metallic blue; head, thorax, and abdomen black and white. Fore wing white; the costa, subcostals, and median nervures blue; all the nervures bordered with black; black spots in the middle and upper angle of cell; a submarginal series of black spots from vein 4 to the inner margin. Hind wing white; the whole disk bright yellow; the outer margin and veins near it black; cilia of both wings white.

This species is probably a mimic of *Danais crocea*.

In Coll. B. M. is a specimen of *I. pieridoides*, H.-S., labelled Darjiling, but as it is a Bornean species and an excellent mimic of *Idiopsis daos*, which does not occur in Sikhim, and as the specimen was bought at an auction, the locality is almost certainly wrong.

Hab. Tenasserim. *Exp.* 74 millim.

Fig. 184.—*Isbarta binghami*, ♀. 1/1.

592. **Isbarta imitans**, *Butl. Ill. Het.* v, p. 24, pl. 84, fig. 1; *C. & S.* no. 418.

♂. Antennæ, head, thorax, and abdomen metallic blue or green, with white markings. Wings cupreous brown, with yellowish-white spots and streaks in the interspaces; fore wing with one streak below the cell, two in the cell, and three longer streaks below it, six spots beyond the cell and a submarginal series of six spots. Hind wing with the inner area shot with green; two streaks in the cell and three below it, and a series of five streaks beyond the cell.

♀ with the inner area of hind wing not shot with green.

An excellent 'mimic' of *Danais aglea*.

Hab. Bhutan; Karen Hills. *Exp.*, ♂ 72, ♀ 84 millim.

593. **Isbarta cuprea**, *Swinh. Trans. Ent. Soc.* 1891, p. 475.

♀. Fore wing brown, shot with purplish cupreous; a small basal white spot; a submarginal obsolescent series of spots. Hind wing brown ; two pale streaks in the cell ; a series of streaks between the nervules beyond the cell. Cilia of both wings white. Underside with the costa of both wings blue.

Hab. Khásis; E. Pegu. *Exp.* 80 millim.

Genus **CALLAMESIA**.

Callamesia, *Butl. A. M. N. H.* (5) xvi, p. 345 (1853).

Type, *C. midama*, H.-S.

Range. N.E. India; Burma; Malacca; Nias.

Fore wing with vein 1 *c* bent and sending a bar to 1 *b* ; veins 6, 7, 8, and 9 stalked, vein 10 not quite touching 12, 11 anastomosing with 12; numerous veinlets between 12 and the costa.

594. **Callamesia midama**, *Herr.-Schäffer, Samml. aussereur. Schmett.* pl. 2, fig. 7 (♂); *C. & S.* no. 401.
Cyclosia venusta, *Wlk. Cat.* ii. p. 416; *C. & S.* no. 424.
Epyrgis hormenia, *Herr.-Schäffer, Samml. aussereur. Schmett.* pl. 2, fig. 8 (♀); *C. & S.* no. 404.
Amesia stelligera, *Butl. Ill. Het.* v. p. 23, pl. 83, figs. 8, 9; *C. & S.* no. 403.

♂. Antennæ metallic blue; head, thorax, and abdomen black, the last banded with white below; the collar spotted with blue; abdomen and hind wing shot with purple. Fore wing with two series of small white spots; the apex and outer margin

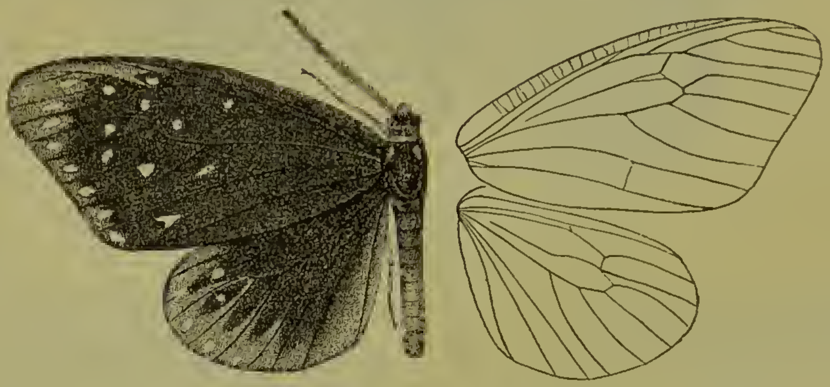

Fig. 185.—*Callamesia midama*, ♂. 1/1.

brilliant blue. Hind wing with the apex brilliant blue; the two series of spots sometimes more or less reproduced. Underside with two white spots in the cell of the fore wing and two beyond; the two series of submarginal spots larger and present on both wings; the costa and outer margin of both wings brilliant blue: the inner area purplish.

♀ with the fore wing less shot with blue; two spots in the cell, two beyond, and two below the cell in addition to those of the male. Hind wing with two series of spots well represented, and also with two spots in the cell.

In the form *stelligera* the inner submarginal series of spots on the hind wing is small; in *midama* those towards the inner margin become streaks; whilst in *hormenia* these streaks occupy the greater part of the cell and the interspaces below it. One Sikhim female is browner, with scarcely any blue shot on upperside. These variations occur irrespective of locality and only in the female. The species is a beautiful 'mimic' of the blue *Euplœas*.

Hab. Sikhim; Bhutan; Assam; Nágas; Sylhet; Burma; Siam.
Exp., ♂ 74, ♀ 86 millim.

Genus GYNAUTOCERA.

Gynautocera, *Guér. Mag. Zool.* 1831, *Ins.* pl. 12.

Type, *G. papilionaria*, Guér.
Range. Himalayas; N.E. India: Calcutta; Burma.

The fore wing very much produced at apex, so that the outer margin becomes very oblique; veins 7, 8, and 9 stalked; numerous veinlets between vein 12 and the costa. Hind wing rounded; mid and hind tibiæ with minute terminal pairs of spurs.

595. **Gynautocera papilionaria,** *Guér. Mag. Zool.* 1831, pl. 12; *C. & S.* no. 399.
Chalcosia selene, *Koll. Hügel's Kaschmir*, iv. p. 463.
Histia fraterna, *Moore, P. Z. S.* 1883, p. 15; *C. & S.* no. 397.
Gynautocera rara, *Swinh. Trans. Ent. Soc.* 1891, p. 476.

Antennæ metallic blue; head, thorax, and abdomen black; vertex of head crimson; pectus and segmental bands on abdomen below and end of abdomen crimson. Wings black; fore wing with a greenish tinge, and the veins of the outer half bordered with greenish fuscous; hind wing shot with deep blue; a large white

Fig. 186.—*Gynautocera papilionaria*, ♂. 1/1.

patch between veins 2 and 5, extending slightly into the cell and with its edges and the veins crossing it metallic blue. Base of wings below crimson.

In the form *fraterna* the white patch of the hind wing extends to the costa and nearly to anal angle, whilst in *rara* it is small and suffused with blue and there is a little crimson on the metathorax.

Hab. The Himalayas; Calcutta; Assam; Nágas; Sylhet; Bassein (Pegu); Tenasserim. *Exp.* 84–96 millim.

Genus **HISTIA**.

Histia, *Hübn. Verz.* p. 198 (1818).

Type, *H. flabellicornis*, Fabr.

Range. N.E. & S. India; China; Burma; Java.

Fore wing with shape and venation as in *Gynautocera*, except that vein 11 anastomoses with 12. Hind wing with the outer margin produced into a long tail, and the cell lengthened and narrowed.

596. **Histia flabellicornis,** *Fabr. Sp. Ins.* ii, p. 163; *C. & S.* no 396.
Papilio rhodope, *Cram. Pap. Exot.* i. pl. 30 E.

Head, thorax, abdomen, and fore wing coloured as in *Gynautocera papilionaris*, except that the abdomen is marked with blue. Hind

Fig. 187.—*Histia flabellicornis*, ♂. 1/1.

wing brilliant metallic blue or green to near the end of cell, the distal portion black, with a slight blue shot. Underside with the bases of the wings crimson, the basal half with a blue spot.

Hab. Hong Kong; Sikhim; Assam; Khásis; Nágas; Burma. *Exp.* 70–80 millim.

597. **Histia nilgira,** *Moore, Lep. Atk.* p. 18; *C. & S.* no. 398.

Differs from *flabellicornis* in the metallic-green colour of the hind wing extending to beyond the cell in the male: female with a broad whitish band across the hind wing beyond the cell including the extremity of the cell and widest on the disk.

Hab. Slopes of Nilgiris, 3000 feet. *Exp.* ♂ 68, ♀ 78 millim.

598. **Histia albimacula,** n. sp.
Histia selene, *Wlk.* (nec *Koll.*) *Cat.* ii, p. 413.

♂ from Burma differs from that sex of *flabellicornis* and *nilgira* in having a white patch below the end of the cell of the hind wing between veins 2 to 4. The ♀ from Java has the white band as in *nilgira*.

Hab. Momeit, Burma, 2000 feet (*Doherty*), and Java. *Exp.* 68 millim. Type in coll. Elwes.

599. **Histia cometaris,** *Butl. A. M. N. H.* (5) x, 1882, p. 374; *C. & S.* no. 395.

♂. The basal half of the hind wing black, with a very slight blue suffusion towards the inner margin; the white band extends from the inner margin to the cell, but does not reach the costa.

Hab. Tenasserim; E. Pegu, 3000 feet. *Exp.* 76 millim.

Genus CANERCES.

Canerkes, *Moore, P. Z. S.* 1865, p. 802.

Type, *C. euschemoides*, Moore.
Range. Eastern Pegu; Sylhet; Sikhim.

Palpi very minute. Legs without spurs. Fore wing with the outer margin excised; vein 3 from the end of the cell; 4 and 5 stalked; 6, 7, 8, and 9 stalked together, and not curved. Hind wing broad and square; vein 6 absent.

600. **Canerces euschemoides**, *Moore, P. Z. S.* 1865, p. 802, pl. 42, fig. 8; *C. & S.* no. 349.

♂. Antennæ blue-black; head and thorax yellow, with black markings; abdomen yellow, with black segmental bands. Fore wing with the basal half yellow; two blue-black spots near the

Fig. 188.—*Canerces euschemoides*, ♂. $\frac{1}{1}$.

base, one in the cell, and a larger blue-black spot on inner margin; distal half of wings deep blue-black, with black streaks in the interspaces; a white spot in the end of the cell, five beyond, and two in the interno-median interspace. Hind wing yellow, with an irregular black patch on the apex and outer margin, extending round below the cell and enclosing three yellow spots between veins 2 to 5; vein 1*b* streaked with black. Underside with the apical half of fore wing brilliant blue.

A beautiful 'mimic' of the *Euschemas* of the *bellona* group.

Hab. Sikhim; Sylhet; E. Pegu, 1000 feet. *Exp.* 62 millim.

Genus PHILOPATOR.

Philopator, *Moore, P. Z. S.* 1865, p. 800.

Type, *P. basimaculata*, Moore.
Range. Sikhim to Manipur.

Wings rounded. Fore wing with veins 4 and 5 stalked, 7, 8, and 9 stalked; 11 anastomosing with 12. Hind wing with vein 6 present.

601. **Philopator basimaculata**, *Moore, P. Z. S.* 1865, p. 800, pl. 42, fig. 6; *C. & S.* no. 360.

♀. Head, thorax, and abdomen yellow. Fore wing with the base yellow, edged with black and with two series of black spots on

Fig. 189.—*Philopator basimaculata*, ♂. 1/1.

it: the rest of the wing milky white, the veins and margins fuscous: two fuscous spots at the end of the cell and fuscous streaks in each of the marginal interspaces. Hind wing similar to the fore wing, except that there is only one black spot on the yellow basal patch and one in the end of the cell.

♂. The wings narrower: the outer half of both wings suffused with fuscous.

Hab. Sikhim; Nágas; Manipur. *Exp.*, ♂ 50, ♀ 44–58 millim.

Genus **AGALOPE**.

Agalope, *Wlk. Cat.* ii, p. 437 (1854).

Type, *A. hyalina*, Koll.

Range. Himalayas; Burma.

Wings shorter than in *Philopator*; the outer margin of fore wing more erect; vein 11 not anastomosing with 12; veins 4 and 5 rarely from the cell.

602. **Agalope hyalina**, *Koll. Hügel's Kaschmir*, iv, p. 462.
 Agalope basalis, *Wlk. Cat.* ii, p. 438; *Butl. Ill. Het.* v, pl. 84, fig. 5; *C. & S.* no. 429.
 Agalope primularis, *Butl. P. Z. S.* 1875, p. 392; *id. Ill. Het.* v, pl. 84, fig. 7; *C. & S.* no. 431.
 Agalope glacialis, *Butl. Ill. Het.* v, p. 26, pl. 84, fig. 6; *C. & S.* no. 430.

Antennæ, head, thorax, and abdomen black. Wings yellowish hyaline; fore wing with the base orange; a fuscous band across the cell, which is sometimes continued as a waved line to near the outer angle; the apical marginal area fuscous; the veins crossing it dark; a pale spot between veins 7 and 8, and a larger one between veins 3 and 4. Hind wing uniform yellowish hyaline.

In the var. *primularis* the basal orange patch to the fore wing is generally absent; the area below the cell is brighter yellow, and the transverse band and apical fuscous area are more extensive.

In *glacialis* the wings are whitish hyaline; the cell of the fore wing from the orange basal patch to near the end suffused with fuscous.

Fig. 190.—*Agalope hyalina*, ♂. 1/1.

Hab. Himalayas, from Simla to Sikhim; Manipur; Burma. *Exp.*, ♂ 42, ♀ 50 millim.

Genus CHELURA.

Chelura, *Hope, Trans. Linn. Soc.* xviii, p. 444 (1841).

Type, *C. bifasciata*, Hope.

Range. The Himalayas; Burma.

Fore wing with the apex more produced than in *Agalope*; the outer margin more oblique and excised; veins 4 and 5 on a longer stalk; veins 10 and 11 given off closer together.

SECT. I. Veins 4 to 9 of fore wing not much curved; vein 6 from below the angle of cell.

603. **Chelura bifasciata**, *Hope, Trans. Linn. Soc.* xviii, p. 444; *C. & S.* no. 451.

Antennæ, head, thorax, and abdomen black, the terminal segments of the last consisting of red-brown horny plates. Wings

Fig. 191.—*Chelura bifasciata*, ♂. 1/1.

fuscous hyaline, the veins blackish; fore wing with the base black,

then a subbasal orange band edged with black; an orange medial band edged with black.

Hab. Naini Tal; Nepal; Sikhim; Assam. *Exp.* 90 millim.

SECT. II. Veins 4 to 9 of the fore wing much curved; vein 6 given off close to 7.

604. **Chelura eronioides**, *Moore, Lep. Atk.* p. 15; *C. & S.* no. 452.

Differs from *bifasciata* in the fore wing having a small white spot on the basal black patch; the subbasal orange band present, but not the medial orange or fuscous bands; the marginal area with the pale patches between the fuscous-edged veins reduced to spots. In one abnormal specimen vein 6 of the hind wing forks before the margin.

Hab. Sikhim. *Exp.* 64 millim.

605. **Chelura basiflava**, *Moore, P. Z. S.* 1879, p. 391; *C. & S.* no. 450; *Waterh. Aid,* ii, pl. 131, fig. 3.

Differs from *eronioides* in the collar, tegulæ, and end of abdomen being chestnut; the whole base of fore wing chestnut; two fuscous antemedial bands on a pale ground; the outer half fuscous, with four pale spots in the cell and a series between the nervules beyond the cell. Hind wing with the base pale; the outer area fuscous, with a series of pale spots beyond the cell.

Hab. Sikhim. *Exp.* 68 millim.

606. **Chelura glacialis**, *Moore, P. Z. S.* 1872, p. 570; *C. & S.* no. 453.

♂. Collar and thorax olive-brown; the first and last segments of abdomen olive-brown, the medial segments whitish, with a lateral white stripe. Fore wing with the base olive-brown, followed by a whitish-hyaline area, then an irregular fuscous band; the apical marginal area fuscous, with pale spots in the interspaces. Hind wing whitish hyaline, with a fuscous spot at the end of the cell, and the outer margin fuscous.

♀ with the fuscous markings on the wings much reduced.

Appears to "mimic" *Abraxas leopardina.*

Hab. Sikhim; Burma. *Exp.* 57 millim.

Genus **ELCYSMA.**

Elcysma, *Butl. Trans. Ent. Soc.* 1881, p. 4.

Type, *E. westwoodi*, Voll., from Japan.

Range. Japan; Nága Hills.

Fore wing as in *Chelura* Sect. I. Hind wing with the outer margin produced into a long tail between veins 3 and 7; veins 4 and 5 stalked.

607. **Elcysma dohertyi**, *Elw. P. Z. S.* 1890, p. 386, pl. xxxiv, fig. 4.

♂. Antennæ, head, thorax, and abdomen black. Wings fuscous hyaline, with the veins darker. Fore wing with a small basal black

Fig. 192.—*Elcysma dohertyi*, ♂. 1/1.

patch, followed by a broad subbasal orange band, edged with fuscous. On the left fore wing of the type veins 7 and 8 anastomose before the margin.

Differs from *westwoodi* in vein 10 of fore wing being given off much closer to the end of the cell; veins 4 and 5 of hind wing being on a shorter footstalk, and 7 being given off from 6 just before the margin instead of from the cell.

Hab. Nágas, 5000 feet. *Exp.* 72 millim.

Subfamily PHAUDINÆ.

The mouthparts wanting; branches of antennæ not dilated at extremities; antennæ not flabellate at tips.

Key to the Genera.

a. Hind wing broad and rounded.
  a'. Fore wing with vein 1 *c* present, 3 and 4 stalked; 11 not anastomosing with 12 . 1. Boradia, p. 286.
  b'. Fore wing with vein 1 *c* absent, 3 and 4 from the cell; 11 anastomosing with 12. 2. Anomœotes, p. 286.
b. Hind wing long and narrow.
  a'. Abdomen without tufts of hair........ 3. Alophogaster, [p. 287.
  b'. Abdomen with short lateral and long anal paired tufts of hair .... 4. Phauda, p. 287.

c. Hind wing with the outer margin produced into a long tail, or in some females the whole wing filamentous; frenulum absent .... 5. HIMANTOPTERUS, [p. 288.

Genus BORADIA.

Boradia, *Moore, P. Z. S.* 1879, p. 391.

Type, *B. carneola*, Moore.
Range. N.W. Himalayas.

Fore wing with veins 4 and 5 stalked; 6 from the upper angle of the cell; 7 and 8 stalked; 9 and 11 absent. Hind wing with all the veins from the cell, or 3 and 4 abnormally stalked. Mid and hind tibiæ without spurs.

Fig. 193.
Boradia carneola, ♂. $\frac{1}{1}$.

608. **Boradia carneola**, *Moore, P. Z. S.* 1879, p. 392; *C. & S.* no. 366.

Antennæ, head, and thorax grey; abdomen black. Wings uniform yellowish hyaline.

Hab. Kángra. *Exp.* 36 millim.

Genus ANOMŒOTES.

Anomœotes, *Feld. Reis. Nov.* pl. C, fig. 5, *Erkl. Het.* p. 1 (1874).
Akesina, *Moore, P. Z. S.* 1888, p. 395.

Type, *A. levis*, Feld., from Natal.
Range. Kángra; Natal; Angola.

Antennæ bipectinated. Mid and hind tibiæ without spurs. Fore wing with vein 1 *c* absent, 6 from near the middle of cell, 7 and 8 stalked, 9 and 10 absent, 11 anastomosing with 12.

Fig. 194.
Anomœotes basalis, ♂. $\frac{1}{1}$.

609. **Anomœotes basalis**, *Moore, P. Z. S.* 1888, p. 396; *Butl. Ill. Het.* vii, p. 28, pl. cxxi, fig. 9; *C. & S.* no. 491 B.

♂. Antennæ fuscous; head, thorax, and abdomen pale fulvous. Base of wings fulvous, the remainder semidiaphanous, fuscous.

Hab. Kángra. *Exp.* 28 millim.

Genus **ALOPHOGASTER**, nov.

Type, *A. rubribasis*, Hmpsn.
Range. Nága Hills.
Antennæ bipectinated, with short branches. Fore wing with all the veins from the cell. Hind wing long and narrow. Abdomen without tufts of hair. Tibiæ without spurs.

610. **Alophogaster rubribasis**, n. sp.

Fig. 195.
Alophogaster rubribasis, ♂. ½.

♂. Antennæ black; head, thorax, and abdomen scarlet, the last with black bands on the segments above. Wings semi-diaphanous fuscous; fore wings with the base scarlet; the rest of the wing with purple tints in a side light.

Hab. Nága Hills. *Exp.* 27 millim. Type in coll. Elwes.

Genus **PHAUDA**.

Phauda, *Wlk. Cat.* i, p. 256 (1854).

Type, *P. flammans*, Wlk.
Range. China; North India; Java; Sumatra.
Antennæ with short bipectinations in the male, simple in the female. Wings very long and narrow; fore wing with the apex rounded and outer margin very oblique; hind wing with vein 6 from near the middle of discocellulars. Mid and hind tibiæ with minute terminal pairs of spurs. Abdomen with lateral tufts of hair on all except the first two segments, and a pair of long anal tufts in the male.

SECT. I. Fore wing with veins 7 and 8 arising from the cell.

611. **Phauda flammans**, *Wlk. Cat.* i, p. 257; *C. & S.* no. 284; *Butl. Ill. Het.* i, p. 20, pl. 9, fig. 2.

Fig. 196.
Phauda flammans, ♂. ½.

Antennæ black, with white tips; head and thorax scarlet; abdomen black, sparsely covered with scarlet hairs and with thick scarlet lateral tufts, a pair of long, black, anal tufts in the male. Fore wing scarlet; a large, rounded, black patch on outer margin. Hind wing semi-diaphanous; the basal area reddish, the outer area blackish.

Hab. Simla; Sikhim; Burma. *Exp.*, ♂ 34, ♀ 30 millim.

SECT. II. Fore wing with veins 7 and 8 stalked.

612. **Phauda fuscalis**, *Swinh. Cat. Het. Mus. Oxon., ined.*

♀. The wings fuscous, with only the base of fore wing red.
Hab. Assam. *Exp.* 43 millim.

Genus HIMANTOPTERUS.

Himantopterus, *Westmael, Bull. Acad. Brux.* iii, p. 162 (1836).
Thymara, *Doubleday, Zoologist*, i, p. 197 (1843).

Type, *H. fuscinervis*, Westm., from Java.
Range. Africa; Assam; S. India; Burma; Java.

The antennæ bipectinated in the male, serrated in the female. Mid and hind tibiæ with minute terminal pairs of spurs. Frenulum absent. Wings covered with hair-like scales; the neuration varies so much that a genus might be made for each species; the hind wing narrow and terminating in a long tail, in the females of some of the species filiform throughout. The neuration of hind wing much aborted; the costal and internal veins, when present, anastomose for some distance with the subcostal and median, which meet toward the end of the broad part of the wing to form the cell.

Fig. 197.—*Himantopterus zaida*, ♂. $\frac{1}{1}$.

They are degraded forms which have arisen from an ancestral type; the veinlet in the cell and vein 1 *c* of fore wing being more or less developed, show that they belong to the *Zygænidæ*, and the absence of mouthparts places them in the subfamily *Phaudinæ* near *Pryeria*, while on the other hand they are allied to the *Psychidæ*.

613. **Himantopterus dohertyi**, *Elwes, Trans. Ent. Soc.* 1890, p. 332, pl. x, figs. 1–7.

♂. Fuscous; the collar and end of abdomen orange. Fore wing with the disk diaphanous; veins 4 and 5 from the lower angle of the cell, 10 and 11 absent. Hind wing with the basal part orange, the distal portion and tail black, with a few yellowish hairs at tip; neuration less aborted than the other members of the genus, 8 veins being present.

♀. The thorax ochreous; the whole of fore wing diaphanous; hind wing filiform throughout, but with the neuration as in male.
Hab. Nága Hills, 5000 feet. *Exp.*, ♂ 24, ♀ 34 millim.

614. **Himantopterus caudatus**, *Moore, P. Z. S.* 1879, p. 394; *C. & S.* no. 458; *Elwes, Trans. Ent. Soc.* 1890, pl. x, figs. 9, 11.

Differs from *dohertyi* in the disk of the fore wing being reddish; veins 4 and 5 stalked and 10 present. Hind wing broader and orange, with a round black spot below the costa and another near the anal angle; the tail black; veins 1 and 3 absent.
Hab. Nilgiris and Wynaad, 3000 feet; Burma. *Exp.* ♂ 20 millim.

615. **Himantopterus zaida**, *Doubleday, Zoologist*, i, p. 197; *Elwes, Trans. Ent. Soc.* 1890, pl. x, figs. 8, 10; *C. & S.* no. 459.

♂. Head, thorax, and abdomen ochreous. Fore wing ochreous, with the veins and margins black. Hind wing broader than in *caudatus* and ochreous, with two similar black spots and the tail black; veins 1, 3, and 4 absent.

Hab. Khási Hills. *Exp.* 20 millim.

The following species formerly recorded as Indian are omitted.

Debos iratus, Swinh., C. & S. no. 277, is probably a *Tinea*.

Dioptis perdica, Cram., C. & S. no. 350, Geometer from Amboina.

Codane leucomelas, Moore, C. & S. no. 442, is from Siam.

The genus *Chatamla*, Moore, C. & S. nos. 426, 427, 428, belongs to the *Epiplemidæ*.

Atossa nelcinna, Moore, C. & S. no. 457, belongs to the *Uraniidæ*.

C. & S. nos. 351–359 form the family *Epicopiidæ*.

Family PSYCHIDÆ.

Fig. 198.—Larva of *Clania crameri*. ½.

The *larvæ* feed in a case composed of a silk lining with twigs, grass, and bits of leaves or vegetable matter attached to the outside. The pupa is formed inside the larva-case. The perfect female also lives in the case and is devoid of legs, wings, antennæ, and mouth-parts (being thus merely a vermiform egg-sac); the three thoracic segments bear corneous dorsal plates. In the genera *Bijugis* and *Fumea*, however, the antennæ are articulated. Copulation takes place by the male alighting on the case and inserting his protrusible abdomen between the case and the ventral surface of the female; in *Fumea* the female comes out of the case for copulation. Parthenogenesis is known to be the normal method of reproduction in *Apterona helix*, but it is extremely doubtful if it often occurs in other species of *Psychidæ*.

The males have the antennæ bipectinated (or serrate in the genus *Apterona*); the proboscis, palpi, and ocelli absent. Fore wing with two internal nervures, 1 *b* being forked at the base; a single or forked veinlet in the cell. Hind wing with a frenulum and three internal nervures.*

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* After the *Psychidæ* would follow the *Solenobia* section of the *Tineidæ*, if the Heterocera could be arranged in a linear series.

Key to the Subfamilies.

a. Fore wing with veins 1 *b* and *c* anastomosing.
  a'. Fore wing with vein 1 *b* sending several branches to inner margin . . . . 1. *Œceticinæ.*
  b'. Fore wing with vein 1 *b* sending no branch to inner margin . . . . 3. *Chaliinæ.*
b. Fore wing with veins 1 *b* and *c* anastomosing or separate.
  a'. Fore wing with vein 1 *b* sending one branch to inner margin . . . . 2. *Psychinæ.*
c. Fore wing with veins 1 *b* and *c* separate; 1 *b* sending no branch to inner margin.
  a'. Hind tibiæ with one pair of spurs . . . . . . 5. *Psychoidinæ.*
  b'. Hind tibiæ with two pairs of spurs . . . . . . 4. *Canephorinæ.*

Subfamily ŒCETICINÆ, *H.-S.*

Fore wing with vein 1 *c* anastomosing with 1 *b*, which emits several branches to the inner margin; a forked veinlet in the cell of both wings.

Key to the Genera.

a. Antennæ bipectinate to two-thirds length; abdomen long; wings long and narrow . . . . 1. ŒCETICUS, p. 290.
b. Antennæ bipectinate to tip; abdomen shorter; wings broader and shorter.
  a'. Fore tibia with a spine . . . . 2. CLANIA, p. 291.
  b'. Fore tibia without a spine . . . . 3. AMATISSA, p. 292.

Genus **ŒCETICUS.**

Oiketicus, *Lands. Guild. Trans. Linn. Soc.* xv, p. 375 (1827).
Dappula, *Moore, Lep. Ceyl.* ii, p. 103 (1883).

Type, *O. kirbyi*, L. Guild., from Central America.
Range. Central and S. America; China; Ceylon; Australia.
♂. Antennæ bipectinated to two-thirds length; the wings long and straight; the abdomen extending far beyond the anal angle. Fore tibia with a very long spine.

616. **Œceticus tertius,** *Templ. Trans. Ent. Soc.* v, 1847, p. 39, pl. v, figs. 1–5 (larva-case).
Oiketicus templetonii, *Westw. P. Z. S.* 1854, p. 234; *C. & S.* no. 492.

Fig. 199.—*Œceticus tertius*, ♂. $\frac{1}{1}$.

♂. Head and thorax greyish black; abdomen fuscous. Fore

wing greyish fuscous; the veins streaked with brown; a black patch at end of cell; a black streak beyond the end of cell; a dark patch at base of inner margin. Hind wing greyish fuscous; the veins streaked with brown.

Larva-case covered with minute comminuted fragments of vegetable matter.

Hab. Hongkong; Ceylon. *Exp.* 36 millim.

Genus **CLANIA**.

Clania, *Wlk. Cat.* iv, p. 963 (1855).
Eumeta, *Wlk. Cat.* iv, p. 964 (1855).
Cryptothelea, *Wlk. Cat.* iv, p. 970 (1855).
Lansdownia, *Heyl. Ann. Soc. Ent. Belg.* xxv, 1881, p. 66.

Type, *C. lewini*, Westw., from Australia.

Range. Centr. America; Africa; Japan; Formosa; India and Ceylon; Borneo; Java; Celebes; Australia; Duke of York Island.

♂. Antennæ bipectinated to tips; abdomen shorter than in *Œceticus*. Wings large and broad: fore wing with veins 4 and 5 stalked, 6 present, 8 and 9 stalked; hind wing with vein 8 sending branches to the costa. Fore tarsus with the terminal joint long; tibia with a long spine.

617. **Clania crameri**, *Westw. P. Z. S.* 1854, p. 236; *Moore, Lep. Ceyl.* ii, pl. 118, figs. 1, 1 *a* (larva-case); *C. & S.* no. 490.

♂. Head, thorax, and abdomen clothed with light and dark brown hair. Fore wing red-brown, the veins streaked with black; the interspaces with pale streaks; more or less fuscous suffusion on outer area. Hind wing smoky brown. Wings rather short and broad.

Larva-case formed of longitudinally arranged twigs.

Hab. Ceylon. *Exp.* 30 millim.

618. **Clania variegata**, *Snell. Tijd. Ent.* xxii, 1879, p. 114.
Eumeta layardii, *Moore, Lep. Ceyl.* ii, p. 102, pl. 118, figs. 2, 2*a* (larva-case); *C. & S.* no. 491.
Eumeta pryeri, *Leech, P. Z. S.* 1888, p. 598.
Eumeta sikkima, *Moore, Indian Museum Notes*, ii, no. 1, p. 67 (1891).

Fig. 200.—*Clania variegata*, ♂. $\frac{1}{1}$.

♂. Differs from *crameri* in the wings being longer, the apex of fore wing more produced and pointed; fore wing with the pale

streaks in the interspaces more prominent. The form *sikkima* is darker.

The number and position of the branches between vein 1 *b* of the fore wing and the inner margin, and also between vein 8 of the hind wing and the costa, are very variable; a bar between veins 7 and 8 of the hind wing towards the apex is sometimes developed in addition to the one at centre of cell; these variations occurring in specimens from the same locality.

Hab. Shanghai; Canara; Nilgiris; Ceylon; Borneo; Celebes. *Exp.* 40–42 millim.

Genus **AMATISSA.**

Amatissa, *Wlk. Journ. Linn. Soc.* vi, p. 138 (1862).
Bambalina, *Moore, Lep. Ceyl.* ii, p. 103 (1883).
Kophene, *Moore, Lep. Atk.* p. 72 (1879).

Type, *A. consorta*, Templ.

Range. Calcutta; Ceylon; Borneo.

Fore tibia without a spine; the terminal joint of tarsus long. Antennæ plumose. Fore wing with vein 1 *b* sending two spurs to inner margin and anastomosing with 1 *c*; veins 8 and 9 stalked; a forked veinlet in the cell, the lower branch sending a spur to median nervure. Hind wing with vein 6 absent; 8 connected with 7 by a bar and not sending spurs to the costa; a forked veinlet in cell.

619. **Amatissa consorta**, *Templ. Trans. Ent. Soc.* v, 1847, p. 40, pl. v, figs. 6, 7, (larva-case); *C. & S.* no. 489.
Amatissa inornata, *Wlk. Journ. Linn. Soc.* vi, p. 138.

Fig. 201.—*Amatissa consorta*, ♂. ¹⁄₁.

♂. Head, thorax, abdomen, and fore wing uniform dark brown.

Larva-case covered with minute comminuted fragments of vegetable matter.

Hab. Colombo, Ceylon; Borneo. *Exp.* 28 millim.

620. **Amatissa cuprea**, *Moore, Lep. Atk.* p. 72; *C. & S.* no. 497.

♂. Uniform bright brown with a slight golden tinge.

Hab. Calcutta. *Exp.* 24 millim.

Subfamily PSYCHINÆ, *H.-S.*

Fore wing with veins 1 *b* and *c* anastomosing or remaining separate; 1 *b* emitting a single branch to inner margin; the veinlets in the cell single or forked. Fore tibiæ with or without a spine; hind legs shorter than fore legs; tibiæ with no spurs or with a minute terminal pair.

Key to Genera and Subgenera.

A. Fore tibia with a long spine...... I. ACANTHOPSYCHE, p. 293.
a. Fore wing with veins 1 *b* and *c* anastomosing.
a'. Hind wing with the cell closed.
a^2. Vein 6 absent in both wings.. (1) ŒCETICOIDES, p. 293.
b^2. Fore wing vein 6 present; hind wing vein 6 absent.... (2) DASARATHA, p. 294.
c^2. Fore wing vein 6 absent; hind wing vein 6 present.... (3) BRACHYCYTTARUS, p. 295.
d^2. Vein 6 present in both wings . (5) METISA, p. 296.
b'. Hind wing with the cell open .. (4) PTEROMA, p. 296.
b. Fore wing with veins 1 *b* and *c* separate...................... (6) AMICTA, p. 297.
B. Fore tibia without a spine ...... II. PSYCHE, p. 297.
a. Fore wing with veins 1 *b* and *c* anastomosing.
a'. Vein 6 present in both wings .. (1) MANATHA, p. 298.
b'. Fore wing vein 6 present; hind wing vein 6 absent .... (2) HEYLAERTSIA, p. 298.
c'. Fore wing vein 6 absent; hind wing vein 6 present.......... (3) CHALIOIDES, p. 299.
d'. Vein 6 absent in both wings .. (4) EURYCYTTARUS, p. 299.
b. Fore wing with veins 1 *b* and *c* not anastomosing .... (5) BARANDRA, p. 300.

Genus **ACANTHOPSYCHE**.

Acanthopsyche, *Heyl. Ann. Soc. Ent. Belg.* 1881, p. 66.

♂. Antennæ bipectinated to tips, the branches diminishing in length from the middle. Fore tibiæ with a very long spine.

ubgenus ŒCETICOIDES.

Oiketicoides, *Heyl. Ann. Soc. Ent. Belg.* 1881, p. 66.

Type, *Œ. inquinata*, Led., from Europe.

Range. Europe; Japan; India; Ceylon; Australia.

♂. Fore wing with vein 1 *c* anastomosing with 1 *b*; vein 6 absent in both wings. Hind wing with a bar between veins 7 and 8.

SECT. I. Veins 4 and 5 of both wings stalked. Fore wing with vein 7 from cell.

621. **Acanthopsyche** (*Œceticoides*) **bipars**, *Wlk. Cat.* xxxii, p. 406 *C. & S.* no. 866.

Fig. 202.—*Œceticoides bipars*, ♂. 1/1.

♂. Head, thorax, and abdomen black, clothed with white hairs. Fore wing hyaline, the basal area smoky black; veins and margins narrowly black. Hind wing with the basal two-thirds smoky black; the marginal area hyaline; the veins and margins narrowly black.

Hab. Bombay. *Exp.* 18–28 millim.

*622. **Acanthopsyche** (*Œceticoides*) **elwesi**, *Heyl. Ann. Soc. Ent. Belg.* 1890, p. xi.

♂. Head, thorax, and abdomen clothed with greyish-black hair; legs black, the tarsi yellowish. Wings uniform greyish black; fore wing with apex rounded; veinlet in cell single. Hind wing rounded, the upper part of the cell much shorter than the lower.

Hab. Ganjam. *Exp.* 18 millim.

SECT. II. Veins 4 and 5 of both wings from the cell. Fore wing with vein 7 stalked with 8 and 9.

623. **Acanthopsyche** (*Œceticoides*) **cana**, *Hmpsn. Ill. Het.* ix, ined., pl. 19, fig. 21, pl. 176, fig. 8 (larva-case).

♂. Head white; thorax and abdomen pale ochreous brown; wings greyish fuscous.

Larva-case rather smooth, covered with comminuted vegetable scales and fibres.

Hab. Pundaloya, Ceylon. *Exp.* 24 millim.

SECT. III. Fore wing with veins 4 and 5 from cell, 7 from below angle of cell.

*624. **Acanthopsyche** (*Œceticoides*) **minor**, *Moore, Lep. Atk.* p. 73; *C. & S.* no. 498.

♂. Head, thorax, and abdomen pilose. Wings covered with minute scales; pale cupreous brown, palest below.

Hab. Calcutta. *Exp.* 15 millim.

Subgenus DASARATHA.

Dasaratha, *Moore, P. Z. S.* 1888, p. 396.

Type, *D. himalayana*, Moore.

Range. Punjab.

♂. Fore wing with veins 1 *b* and *c* anastomosing; vein 6 present; hind wing with vein 6 absent; a bar between veins 7 and 8. The veinlet in the cell of both wings forked.

625. **Acanthopsyche** (*Dasaratha*) **himalayana**, *Moore, P. Z. S.* 1888, p. 397; *C. & S.* no. 497 A.

♂. Nearly uniform dark brown; the head and thorax rather darkest. Fore wing with veins 7, 8, 9 stalked; 4 and 5 from cell in both wings.

Hab. Dharmsála, Punjab. *Exp.* 18 millim.

626. **Acanthopsyche** (*Dasaratha*) **longicauda**, *Warren, P. Z. S.* 1888, p. 299; *C. & S.* no. 491 A.

♂. Head, thorax, and abdomen pale ochreous grey; antennæ

brownish; terminal segments of abdomen with a very long tuft of brownish hair. Wings hyaline, with a few ochreous and fuscous

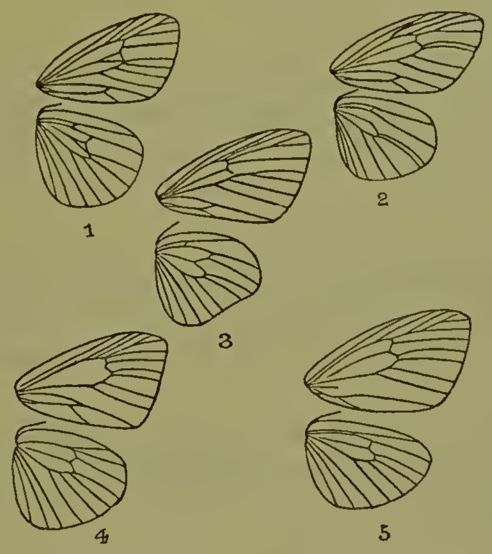

Fig. 203.

1. *Acanthopsyche* (*Dasaratha*) *himalayana.*
2. *A.* (*Pteroma*) *plagiophleps.*
3. *A.* (*Brachycyttarus*) *subteralbata.*
4. *A.* (*Metisa*) *plana.*
5. *A.* (*Amicta*) *rhabdophora.*

scales; fore wing with the costa brown; vein 7 from the cell; both wings with veins 4 and 5 stalked.

Larva-case covered with pieces of straw placed longitudinally.

Hab. Campbellpur. *Exp.* 31 millim.

Subgenus BRACHYCYTTARUS.

Brachycyttarus, *Hmpsn. Ill. Het.* ix, ined.

Type, *B. subteralbatus*, Hmpsn.

Range. Ceylon.

♂. Fore wing with veins 1 *b* and *c* anastomosing; the cell very short; veins 4 and 5 stalked; 6 absent; 8 and 9 stalked. Hind wing somewhat triangular in shape, with the upper part of the cell short; a bar between veins 7 and 8.

627. **Acanthopsyche** (*Brachycyttarus*) **subteralbata**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 23, pl. 176, fig. 12 (larva-case).

♂. Head, thorax, and abdomen dark brown. Wings dark brown; the underside of hind wing shining bluish white.

Larva-case covered by comminuted leaves and suspended by a silken thread.

Hab. Colombo, Ceylon. *Exp.* 15 millim.

Subgenus PTEROMA.

Pteroma, *Hmpsn. Ill. Het.* ix, ined.

Type, *P. plagiophleps*, Hmpsn.
Range. Ceylon.
♂. The branches of antennæ long. Fore wing with veins 1 *b* and *c* anastomosing; veins 6 and 7 absent; 8 and 9 stalked; 11 anastomosing shortly with 12. Hind wing more rounded than in *Brachycyttarus*; the cell open; vein 6 absent; a bar between 7 and 8.

628. **Acanthopsyche** (*Pteroma*) **plagiophleps**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 19, pl. 176, fig. 13 (larva-case).

♂. Uniform pale brown; the underside of hind wing bluish white.
Larva-case suspended by a long silken thread; both case and thread covered with comminuted fragments of leaves.
Hab. Nawala-pittia, Ceylon. *Exp.* 16 millim.

Subgenus METISA.

Metisa, *Wlk. Cat.* iv. p. 957 (1855).
Babula, *Moore, J. A. S. B.* lix, pt. 2, p. 262 (1890).

Type, *M. plana*, Wlk.
Range. India and Ceylon.
♂. Fore wing with veins 1 *b* and *c* anastomosing; vein 6 present. Hind wing with vein 6 present, 8 coincident with 7 to end of cell.

629. **Acanthopsyche** (*Metisa*) **plana**, *Wlk. Cat.* iv, p. 958; *C. & S.* no. 494; *Moore, Lep. Ceyl.* ii. pl. 118, fig. 9.

♂. Head pale brown; thorax and abdomen black-brown, almost bare of scales. Wings very pale brown.
Hab. Colombo, Ceylon. *Exp.* 16 millim.

630. **Acanthopsyche** (*Metisa*) **moorei**, *Heyl. Bull. Soc. Ent. Belg.* 1890, p. 2.
Babula grotei, *Moore, J. A. S. B.* lix, pt. 2, p. 262.

♂. Head, thorax, and abdomen grey-brown; wings coppery brown. Fore wing with veins 7, 8, and 9 stalked.
Hab. Calcutta; Bangalore. *Exp.* 16–20 millim.

*631. **Acanthopsyche** (*Metisa*?) **snelleni**, *Heyl. Bull. Soc. Ent. Belg.* 1890, p. 3.

♂. Head, thorax, and abdomen dark brown; wings yellowish brown, the veins darker; fore wing with the apex produced; veins 8 and 9 stalked.
Larva-case grey, formed of comminuted vegetable matter.
Hab. Assam. *Exp.* 22 millim.

Subgenus AMICTA.

Amicta, *Heyl. Ann. Soc. Ent. Belg.* 1881, p. 66.

Type, *A. quadrangularis*, Christ., from Europe.
Range. Europe; Turkestan; Ceylon; Java.
Fore wing with veins 1 *b* and *c* separate. The typical section has vein 6 of both wings absent.

SECT. II. The cell of both wings short; fore wing with vein 6 present; veins 7, 8, 9, and 10 stalked.

632. **Acanthopsyche** (*Amicta*) **rhabdophora**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 22, pl. 176, figs. 10, 10 *a*, *b*, *c*, *d* (larva-case).

♂. Head, thorax, and abdomen black. Fore wing smoky black, the base whitish. Hind wing pure white.
Larva-case formed of comminuted fragments of vegetable matter, that of the male rougher and suspended by a long thread, whilst the case of the female is smoother and without a thread.
Hab. Pundaloya, Ceylon. *Exp.* 14 millim.

Genus **PSYCHE.**

Psyche, *Schrank, Fauna Boica*, ii, 2 Abth. p. 87 (1802).

♂. Antennæ bipectinated to tips, the branches short or long. Fore tibia with no spine. Fore wing with 10 to 12 veins; veins 1 *b* and *c* anastomosing or separate. Hind wing with 7 or 8 veins.

Fig. 204.

1. *Psyche* (*Manatha*) *albipes*.
2. *P.* (*Chalioides*) *vitrea*.
3. *P.* (*Heylaertsia*) *griseata*.
4. *P.* (*Eurycyttarus*) *pileata*.
5. *P.* (*Barandra*) *fumata*.

Subgenus MANATHA.

Manatha, *Moore, A. M. N. H.* (4) xx, p. 346 (1877).

Type, *M. albipes*, Moore.
Range. Ceylon.

♂. Fore wing with veins 1 *b* and *c* anastomosing, 4 and 5 and 8 and 9 stalked; vein 6 from near upper angle of cell. Hind wing with vein 6 present; a bar between veins 7 and 8.

In the subgenus *Megalophanes*, Heyl., type *viciella*, Den. and Schiff., vein 6 of the fore wing arises from near the lower angle of cell.

633. **Psyche** (*Manatha*) **albipes,** *Moore, A. M. N. H.* (4) xx, p. 347; *id. Lep. Ceyl.* ii, pl. 118, figs. 4, 4 *a* (larva-case); *C. & S.* no. 493.

♂. Uniform dark brown; the tarsi pure white.
Larva-case covered with comminuted vegetable matter.
Hab. Colombo, Ceylon. *Exp.* 20 millim.

Subgenus HEYLAERTSIA, nov.

Type, *H. griseata*, Hmpsn.
Range. Ceylon.

♂. Fore wing with veins 1 *b* and *c* anastomosing; vein 6 present, 8 and 9 stalked; a forked veinlet in cell. Hind wing with vein 6 absent; a bar between veins 7 and 8; veinlet in cell single.

634. **Psyche** (*Heylaertsia*) **griseata,** *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 13.

♂. Head, thorax, and abdomen dark brown. Fore wing dark brown, with a bluish-grey patch powdered with brown scales between the lower angle of the cell and outer angle. Hind wing blue-grey, powdered with brown scales; the apex and cilia brown.
Hab. Pundaloya, Ceylon. *Exp.* 26 millim.

635. **Psyche** (*Heylaertsia*) **fusca,** *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 14, pl. 176, fig. 16 (larva-case).

♂. Head, thorax, abdomen, and wings uniform dark brown.
Larva-case rather short and formed of short pieces of stick arranged transversely in a quadrangle.
Hab. Hewahetta, Ceylon. *Exp.* 24 millim.

636. **Psyche** (*Heylaertsia*) **nudilineata,** *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 4.

♂. Head, thorax, and abdomen dark brown. Fore wing pale brown, with three indistinct oblique bands, devoid of scales—medial,

postmedial, and submarginal. Hind wing still paler, with traces of similar bands.

Hab. Nawala-pittia, Ceylon. *Exp.* 20 millim.

Subgenus CHALIOIDES.

Chalioides, *Hmpsn. Ill. Het.* ix, ined.

Type, *C. vitrea*, Hmpsn.

Range. Ceylon.

Fore wing with veins 1 *b* and *c* anastomosing; 4 and 5 stalked; 6 absent; 8 and 9 stalked. Hind wing with vein 6 present; a bar between veins 7 and 8. Forked veinlets in the cell of each wing. Wings rather long and acute.

637. **Psyche** (*Chalioides*) **vitrea**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 15.

♂. Head, thorax, and abdomen covered with grey-brown pile. Wings perfectly hyaline, the margins very narrowly black.

Hab. Kandy, Ceylon. *Exp.* 28 millim.

Subgenus EURYCYTTARUS.

Eurukuttarus, *Hmpsn. Ill. Het.* viii, p. 66 (1891).

Type, *E. pileatus*, Hmpsn.

Range. Kashmir; Nilgiris; Ceylon.

Vein 6 of both wings absent. Fore wing with veins 1 *b* and *c* anastomosing. Hind wing with a bar between veins 7 and 8. Veinlets in the cell of both wings single.

Sect. I. Fore wing with veins 7, 8, and 9 from angle of cell; 8 and 9 stalked.

638. **Psyche** (*Eurycyttarus*) **pileata**, *Hmpsn. Ill. Het.* viii. p. 66, pl. 144, fig. 13.

♂. Uniform brownish fuscous; the thorax, abdomen, and base of wings rather paler.

Hab. Nilgiris, S. slopes, 3000 ft. *Exp.* 20 millim.

639. **Psyche** (*Eurycyttarus*) **nigra**, n. sp.

♂. Uniform deep black-brown; apex of fore wing rounded.

Hab. Kala, Kashmir (*McArthur*). *Exp.* 17 millim. Type in coll. Leech.

Sect. II. Fore wing with veins 7 and 8 from angle of cell; 9 from before the angle.

640. **Psyche** (*Eurycyttarus*) **rotunda**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 16, pl. 176, fig. 11 (larva-case).

♂. Differs from *pileata* in the wings being broader and more rounded.

Larva-case rough and covered with scales of bark on the upper part, with stalks and fibres on the lower, overlapping each other like tiles.

Hab. Pundaloya, Ceylon. *Exp.* 18 millim.

Sect. III. Fore wing with vein 8 absent.

641. **Psyche** (*Eurycyttarus*) **decemvena**, n. sp.

♂. Uniform dark brown; fore wing with the outer margin rather straight and erect.

Hab. Kiris and Gurais Valley, Kashmir, 8000 ft. (*Leech*). *Exp.* 17 millim. Type in coll. Leech.

Subgenus BARANDRA.

Barandra, *Moore, P. Z. S.* 1888, p. 396.

Type, *B. fumata*, Moore.

Range. N.W. Himalayas.

♂. Fore wing with veins 1 *b* and *c* not anastomosing; vein 6 absent; 8 and 9 stalked. Hind wing with vein 6 absent; a bar between 7 and 8. Veinlets in the cell of both wings single.

642. **Psyche** (*Barandra*) **fumata**, *Moore, P. Z. S.* 1888, p. 396; *C. & S.* no. 491 c.

♂. Head, thorax, and abdomen brown; the pro- and mesothorax dark; metathorax with two dark posterior spots. Wings uniform pale brown.

Hab. Dharmsála. *Exp.* 22 millim.

Subfamily CHALIINÆ, nov.

Fore wing with veins 1 *b* and *c* anastomosing and not sending any branches to inner margin. Veinlets in cell of both wings single or forked. Hind tibiæ with no spurs.

Key to the Genera.

a. Fore tibia with a long spine.
  a'. Hind wing with veins 5 and 8 absent. . . . 1. Chalia, p. 301.
  b'. Hind wing with veins 5 and 8 present . . 2. Mahasena, p. 301.
b. Fore tibia without a spine . . . . 3. Pteroxys, p. 302.

Genus **CHALIA.**

Chalia, *Moore, A. M. N. H.* (4) xx, p. 345 (1877).

Type, *C. doubledayi*, Westw.
Range. Ceylon.
♂. Antennæ with the branches decreasing to tip. Fore tibia with a very long spine. Wings broad and rounded; fore wing with 12 veins; hind wing with veins 5 and 8 absent; veinlets in cell single.

643. **Chalia doubledayi,** *Westw. P. Z. S.* 1854, p. 235; *C. & S.* no. 495; *Moore, Lep. Ceyl.* ii, pl. 118, figs. 5, 5 *a* (larva-case).

♂. Head, thorax, and abdomen covered with grey pile. Wings perfectly hyaline.
Larva-case formed of longitudinally arranged twigs.
Hab. Colombo, Ceylon. *Exp.* 20 millim.

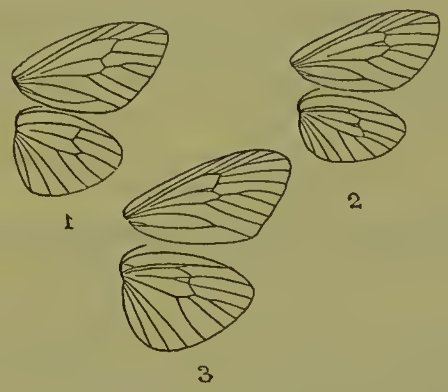

Fig. 205.
1. *Chalia doubledayi.* 2. *Pteroxys goniatus.* 3. *Mahasena hockingi.*

Genus **MAHASENA.**

Mahasena, *Moore, P. Z. S.* 1877, p. 601.

Type, *M. andamana*, Moore.
Range. N.W. Himalayas; Andamans.
♂. Antennæ with the branches decreasing to tip. Fore tibia with a very long spine. Wings longer than in *Chalia*; fore wing with 12 veins; hind wing with 8 veins; the veinlets in the cell forked.

644. **Mahasena andamana,** *Moore, P. Z. S.* 1877, p. 602, pl. 59, fig. 4; *C. & S.* no. 496.

♂. Antennæ and legs brownish fuscous; head, thorax, and abdomen deep fuscous. Wings smoky brown, deep fuscous towards base; hind wing with veins 4 and 5 from cell; the fork of veinlets in the cell of both wings long.
Hab. Andamans. *Exp.* 26 millim.

645. **Mahasena hockingi,** *Moore, P. Z. S.* 1888, p. 397; *Butl. Ill. Het.* vii, pl. 121, fig. 5; *C. & S.* no. 496 A.

♂. Very dark red-brown; the hairs on thorax and abdomen blackish; hind wing with veins 4 and 5 stalked; the fork of the veinlets in the cell of both wings short.

Hab. Kángra. *Exp.* 32 millim.

Genus PTEROXYS.

Pteroxys, *Hmpsn. Ill. Het.* ix, ined.

Type, *P. goniatus,* Hmpsn.

Range. Ceylon.

♂. Antennæ with the branches long and plumose. Fore tibia without a spine. Wings long and narrow. Fore wing with veins 1 *b* and *c* anastomosing; 8 and 9 stalked. Hind wing with a bar between veins 7 and 8. Veinlets in the cell of both wings forked.

Sect. I. Vein 6 absent in both wings.

646. **Pteroxys goniatus,** *Hmpsn. Ill. Het.* ix, ined., pl. 150, fig. 20, pl. 176, fig. 14 (larva-case).

♂. Uniform brownish fuscous; the apices of both wings pointed.

Larva-case formed of comminuted fragments of vegetable matter.

Hab. Pundaloya, Ceylon. *Exp.* 12 millim.

Sect. II. Vein 6 present in both wings.

647. **Pteroxys uniformis,** *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 17, pl. 176, fig. 15 (larva-case).

♂. Uniform dark brown; the apices of the wings less acute.

Larva-case very short and formed of small pieces of twigs arranged transversely in a quadrangle.

Hab. Pundaloya, Ceylon. *Exp.* 14 millim.

Subfamily CANEPHORINÆ, *Heyl.*

♂. Fore wing with veins 1 *b* and *c* not anastomosing; 1 *b* not giving off a branch. Hind tibiæ with two pair of spurs.

Genus MOFFATIA.

Moffatia, *Moore, J. A. S. B.* lix, pt. 2, p. 263 (1890).

Type, *M. plumicauda,* Moore.

Range. Kunáwar.

Antennæ plumose; abdomen with very long lateral tufts of hair from base to apex. Fore wing with vein 1 *c* not anastomosing with 1 *b*; veins 4 and 5 on a short stalk; 8 and 9 stalked. Hind wing with vein 6 absent; 8 connected with 7 by a bar; veinlet in cell of both wings single.

648. **Moffatia plumicauda,** *Moore, J. A. S. B.* lix, pt. 2, p. 264.

Fig. 206.—*Moffatia plumicauda*, ♂. $\frac{1}{1}$.

♂. Dark greyish black, the tufts on abdomen black. Wings hyaline, with scattered hair-like scales; margins rather broadly black; veins black.

Hab. Upper Kunáwar. *Exp.* 24 millim.

Subfamily PSYCHOIDINÆ, *Heyl.*

♂. Fore wing with veins 1 *b* and *c* not anastomosing, 1 *c* very slight; 1 *b* not giving off a branch. Hind tibiæ with a single pair of spurs.

Key to the Genera.

a. Antennæ bipectinated; tibiæ with the spurs long .... 1. Diabasis, p. 303.
b. Antennæ not pectinated but roughly scaled; tibiæ with the spurs minute .... 2. Aprata, p. 303.

Genus DIABASIS.

Diabasis, *Heyl. Ann. Soc. Ent. Belg.* 1881, p. 67.

Type, *D. helicinoides*, Heyl., from Europe.
Range. Europe; Nilgiris.

♂. Antennæ bipectinated, the branches very far apart and slightly swollen at extremities. Wings elongated. Hind legs longer than fore legs, the tibiæ with a pair of long terminal spurs.

649. **Diabasis nilgirensis.**
Bijugis sikkimensis, *Heyl. Ann. Soc. Ent. Belg.* 1890, p. 2 (nom. inept.).

Fig. 207.—*Diabasis nilgirensis*, ♂. $\frac{2}{1}$.

♂. Fore wing with veins 6 and 10 absent; 8 and 9 stalked. Hind wing with veins 6 and 7 stalked, 8 absent; veinlets in cell in both wings forked. Head, thorax, and fore wing pale reddish brown; abdomen and hind wing brownish ochreous. Fore tibia with a long spine.

Hab. Nilgiri plateau, 7000 ft. *Exp.* 16 millim.

Genus APRATA.

Aprata, *Moore, Lep. Ceyl.* ii, p. 106 (1883).

Type, *A. mackwoodi*, Moore.
Range. Ceylon.

Antennæ covered with rough scales; fore tibia without a spur; hind tibia with one pair of minute spurs. Fore wing broad and

rounded; all the veins present; veins 8 and 9 stalked; a forked veinlet in cell of both wings. Hind wing with veins 4 and 5 on a short stalk; all the veins present; 8 connected with 7 by a bar.

Fig. 208.—*Aprata mackwoodi*, ♂. 1/1.

650. **Aprata mackwoodi**, *Moore, Lep. Ceyl.* ii, p. 107, pl. 118, fig. 8; *C. & S.* no. 487.

♂. Uniform bright dark brown; abdomen covered with yellow hair, the terminal segment with a silky grey tuft.

Hab. Ceylon. *Exp.* 20 millim.

Species formerly recorded as Indian which are omitted.

Aprata thwaitesi, Moore, C. & S. no. 488, is a *Tinea* probably allied to *Eustixis*.

Rasicota albescens, Moore, J. A. S. B. 1890, lix, pt. 2, p. 263. Type lost; description unrecognizable.

Fumea? limulus, Rogenh. Verh. zool.-bot. Ges. xxxix, Sitzungsb. p. 60, is a *Tinea*.

Family COSSIDÆ.

Proboscis absent; palpi usually minute or absent; antennæ bipectinated to tip or with distal half simple in both sexes, or wholly simple in female. Tibiæ with spurs absent or minute. Fore wing with vein 1 *b* forked at base; 1 *c* present; an areole formed by veins 7 and 10; veins 7 and 8 forking after the areole; the inner margin usually more or less lobed. Hind wing with three internal veins; vein 8 free from the base or connected with 7 by an erect bar at end of cell. Both wings with forked veinlets in cell. The female may have as many as nine bristles to the frenulum.

Larva. Smooth, with a few hairs; internal feeders, boring galleries in wood or the pith of reeds &c. and often doing considerable damage.

Pupæ in a cocoon formed of silk and chips of wood.*

Key to the Genera.

a. Hind wing with no bar between veins 7 and 8.
  a'. Wings broad; tibiæ with spurs .... 1. Cossus, p. 305.
  b'. Wings long and narrow; tibiæ without spurs.
    *a*². Palpi present.
      *a*³. Hind wing with veins 4 and 5

* After the *Cossidæ* would follow the *Alavona* section of the *Tineidæ*, if the Heterocera could be arranged in a linear series.

given off separately; antennæ simple in ♀ . . . . 2. DUOMITUS, p. 307.
b^3. Hind wing with veins 4 and 5 from a point.
a^4. Palpi minute; antennæ with proximal half bipectinated in both sexes . . . . 3. AZYGOPHLEPS, p. 309.
b^4. Palpi with 3rd joint large. Hind wing with veins 6 and 7 stalked; antennæ of ♂ bipectinated to tips . . . . 6. EREMOCOSSUS, p. 313.
b^2. Palpi absent . . . . 5. PHRAGMATÆCIA, p. 312.
b. Hind wing with a bar between veins 7 and 8 . . . . 4. ZEUZERA, p. 310.

Genus **COSSUS.**

Cossus, *Fabr. Ent. Syst.* iii, pt. ii, p. 3 (1794).
Brachylia, *Feld. Reis. Nov. Lep. Atl.* pl. 82, fig. 7, *Erk.* p. 2 (1867).

Type, *C. ligniperda*, Fabr., from Europe.
Range. Universally distributed.

Palpi slight and flattened in front of face; antennæ of male with the branches short, of female simple; mid tibiæ with one, hind tibiæ with two pairs of minute spurs.

Fore wing with vein 11 given off from the subcostal nervure. Hind wing with vein 8 free from the base; the wings broad; the veinlets in cell with a short fork.

SECT. I. Fore wing with vein 6 from angle of cell; the antennæ of male bipectinate to tip.

651. **Cossus acronyctoides**, *Moore, P. Z. S.* 1879, p. 411, pl. 34, fig. 4; *C. & S.* no. 1584.
Cossus cashmirensis, *Moore, Lep. Atk.* p. 86; *C. & S.* no. 1583.

♂. Head, thorax, and abdomen dark brown. Fore wing brown, the outer half evenly striated with fine lines over its whole surface. Hind wing with faint reticulations.

The form *cashmirensis* has some of the striæ of the fore wing coalescing into somewhat prominent lines, the best marked being one across end of cell, one beyond the cell from veins 6 to 3, and one from the costa before the apex, but these are somewhat variable.

♀. Greyer; the base of fore wing fuscous.

Hab. Kashmir; Ganjam; Bombay; Mhow; Nilgiris. *Exp.* 36–53 millim.

652. **Cossus nigromaculatus**, n. sp.

♀. Head, thorax, and abdomen blackish brown. Fore wing with the inner margin deeply angled near the base; colour brown, greyish towards the costa; a black blotch on the costa near the base;

a small blotch above centre of cell; a large, very irregular, black blotch beyond the cell from the costa to vein 1 *c* extending along vein 3 towards outer margin; an apical black blotch; the outer half of wing reticulated with fine black lines. Hind wing pale.

Hab. Nilgiris, 8000 ft. (*Minchin*). *Exp.* 66 millim. Type in coll. Elwes.

Sect. II. Vein 6 of fore wing given off above the angle of cell.

653. **Cossus cadambæ**, *Moore, P. Z. S.* 1865, p. 822; *C. & S.* no. 1582.

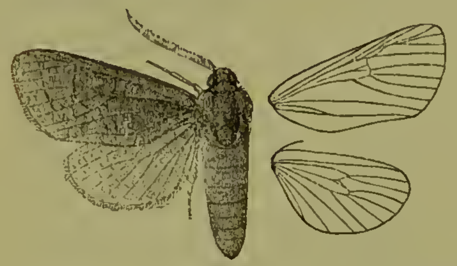

Fig. 209.—*Cossus cadambæ*, ♂. ½.

♂. Head, thorax, and fore wing dull brown; the last with two indistinct dark lines across the end of the cell, and two from near the base of vein 2 to inner margin; a dark postmedial line from costa to vein 2, with some indistinct strigæ beyond it; a similar submarginal line with indistinct strigæ beyond it. Abdomen and hind wing paler; the latter with some faint strigæ towards outer margin.

Hab. Calcutta. *Exp.* 52 millim.

Sect. III. Male with the antennæ serrated at tip, the branches of the proximal half longer. Fore wing with the areole much larger.

654. **Cossus parvipunctus**, n. sp.

♂. Head, thorax, and abdomen brown. Fore wing brown, with a few indistinct dark specks round the end of cell, and three more prominent specks above the centre of vein 1 *b*. Hind wing paler brown.

Hab. Nága Hills, 1500 ft., Oct. (*Doherty*). *Exp.* 52 millim. Type in coll. Elwes.

655. **Cossus pallidalæ**, n. sp.

♂. Head, thorax, and abdomen ochreous white. Fore wing white, slightly suffused with rufous, especially in the cell; numerous wavy rufous striæ in the cell and between vein 2 and the inner margin; a few rufous striæ on the outer area; marginal line rufous. Hind wing white.

The distal portions of the antennæ are broken, but the species appears to belong to the 3rd section.

Hab. Sikhim (*Möller*). *Exp.* 38 millim. Type in coll. Elwes.

*656. **Cossus stigmaticus**, *Moore, Lep. Atk.* p. 86; *C. & S.* no. 1598.

♂. Pale ochreous brown. Fore wing striated with pale brown; pale brown blotches at end of cell, apex, and below apex; two

large red spots below the origin of vein 2, the upper tinged with black.

Hab. Sikhim. *Exp.* 52 millim.

Genus **DUOMITUS**.

Duomitus, *Butl. Ann. N. H.* (5) vi, p. 68 (1880).
Xyleutes, *Hübn. Verz.* p. 195 (1818), gen. non descr.
Chalcidica, *Hübn. Verz.* p. 197 (1818), gen. non descr.
Hinnæya, *Moore, Lep. Ceyl.* ii, p. 153 (1883).

Type, *D. ceramicus*, Wlk.

Range. S. America; S. Africa; India; Ceylon; Amboina; Australia; New Britain.

Palpi minute; antennæ of male with proximal half bipectinated, the distal half simple, wholly simple in female. Legs without spurs. Wings long and narrow; fore wing with the areole very large; vein 11 given off from 10. Hind wing with no bar between veins 7 and 8; veins 4 and 5 given off separately; the fork of the veinlets in the cell of both wings broad.

657. **Duomitus niger**, *Moore, A. M. N. H.* (4) xx, 1877, p. 348; *id. Lep. Ceyl.* ii, pl. 143, figs. 2, 2 *a* (larva); *C. & S.* no. 1594.

♀. Head and thorax black, thickly irrorated with grey scales; abdomen black. Fore wing black, thickly irrorated with grey scales, leaving a black patch beyond end of cell. Hind wing black, irrorated with grey scales towards centre of outer area.

Larva ochreous white; *pupa* red-brown. The "Black Borer" of Coffee-planters.

Hab. Nilgiris; Ceylon. *Exp.* 60 millim.

658. **Duomitus ceramicus**, *Wlk. Cat.* xxxii, p. 587.
Duomitus ligneus, *Butl. Ann. N. H.* (5) vi, p. 68; *id. Ill. Het.* vi, pl. 108, fig. 3; *C. & S.* no. 1599.

Head, thorax, and abdomen pale ochreous brown, more or less suffused with black; patches of black scales at each side of metathorax. Fore wing pale ochreous brown; costa with some black striæ; some black streaks in and below the cell; outer area marbled with black; a large irregular whitish patch at outer angle extending towards apex as a series of decreasing spots suffused with black; some black streaks beyond the cell towards apex. Hind wing fuscous, slightly marbled with black; some diffused pale marks at centre of outer margin.

Hab. Sikhim; Nias; Ceram. *Exp.* 104 millim.

659. **Duomitus strix**, *Cram. Pap. Exot.* ii, p. 77, pl. 145 A.
Zeuzera signata, *Wlk. Cat.* vii, p. 1537; *C. & S.* no. 1597.
Zenzera bubo, *Butl. A. M. N. H.* (5) x, 1882, p. 228.

♂. Head, thorax, and abdomen black, grizzled with grey scales;

some white at base of abdomen and each segment slightly fringed with white. Fore wing pale brownish white, closely reticulated with black markings; some black spots along costa, the most prominent being one at the base, one antemedial, and one post-medial; a spot on inner margin near base; one beyond end of cell; one above the centre of vein 1 *b*; a marginal series, the subapical spot expanding into a large blotch. Hind wing pale clouded with fuscous and with black reticulations, obsolescent on the part covered by the fore wing; a marginal series of spots.

♀ paler; the colour of thorax and ground-colour of fore wing whitish.

The Sikhim specimen is less heavily marked, the black blotches on fore wing smaller.

Hab. Sikhim; Sylhet; Java; Nias; New Ireland; New Britain. *Exp.*, ♂ 110–130, ♀ 170–188 millim.

660. **Duomitus leuconotus,** *Wlk. Cat.* vii, p. 1537; *C. & S.* no. 1591; *Moore, Lep. Ceyl.* ii, pl. 142, figs. 3, 3 *a*.

♂. Differs from *strix* in the head and abdomen being black; the thorax covered with erect white scales. Fore wing blackish; the reticulations not so close; the inner marginal area with irregular white conjoined patches; white patches on the costa towards the apex; a black streak beyond the cell. Hind wing blackish with black reticulations; a white patch on outer margin towards anal angle.

Fig. 210.—*Duomitus leuconotus*, ♂. ½.

♀ with a large white patch sometimes developed at centre of costa of fore wing and those towards apex more developed.

Hab. Simla; Sikhim; Calcutta; Ceylon. *Exp.*, ♂ 98–128, ♀ 180 millim.

661. **Duomitus mineus**, *Cram. Pap. Exot.* ii, p. 52, pl. 131 D; *C. & S.* no. 1592.

Antennæ, head, thorax, and abdomen dark metallic blue-green. Fore wing yellow with a pinkish tinge; base blue-green; spots of the same colour along the costa, the largest being beyond the end of the cell and just before the apex; small spots at centre and end of cell; a large transverse oval spot from median nervure to inner margin; a large longitudinal spot from below the end of the cell at vein 1 *b* to near the apex at vein 7; a marginal series of spots increasing in size to outer angle and continued along the inner margin. Hind wing yellow, with some black down on inner area, and blue-black streaks in the interspaces beyond the cell; two spots on the costa near apex; a series of marginal spots.

Hab. Sikhim; Sylhet; Calcutta; Ganjam; Manilla; Java. *Exp.*, ♂ 68–93, ♀ 108–132 millim.

662. **Duomitus fuscipars**, n. sp.

♂. Head and thorax dark brown, grizzled with grey; abdomen fuscous. Fore wing with the costal half very deep red-brown; the inner area more or less thickly suffused with white scales, the inner margin being white tessellated with black marks. Hind wing paler red-brown; a large white triangular patch tessellated with black on the outer margin between veins 1 *b* and 4.

Hab. Sikhim (*Moller*). *Exp.* 44 millim. Type in coll. Elwes.

Genus **AZYGOPHLEPS**, nov.

Type, *A. scalaris*, Fabr.

Range. Africa; China; throughout India and Burma; Cambodia.

Palpi minute; antennæ bipectinated to half the length in both sexes, the branches longest at the middle of pectinated portion and rapidly diminishing towards base and apex; shorter in female than in male. Legs without spurs. Wings long and narrow; the neuration as in *Duomitus* except that veins 4 and 5 of hind wing arise from a point.

663. **Azygophleps albofasciata**, *Moore, Lep. Atk.* p. 87; *C. & S.* no. 1585.

♂. Antennæ, head, thorax, and abdomen black; collar white. Fore wing brown, with numerous fine black striæ; a broad white band below the subcostal nervure from the base to the apex. Hind wing pale, with numerous faint brown striæ.

Hab. Kashmir; Sikhim. *Exp.* 54–57 millim.

664. **Azygophleps scalaris**, *Fabr. Syst. Ent.* iii, pt. 2, p. 5; *C. & S.* no. 1586, part.
Zeuzera bivittata, *Wlk. Cat.* xxxii, p. 586; *C. & S.* no. 1587.

Antennæ black; head white; thorax white, with a black line on collar and a broad yellow stripe on the vertex; abdomen white.

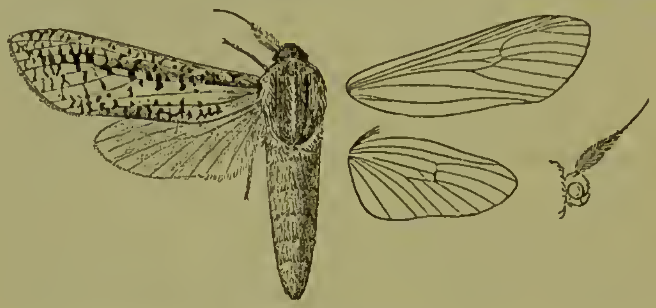

Fig. 211.—*Azygophleps scalaris*, ♂. 1/1.

Fore wing white, with numerous black strigæ forming reticulations; the interno-median interspace having hardly any strigæ; yellow streaks from the base to the end of cell and along the basal two thirds of inner margin. Hind wing white.

Hab. Angola; Karáchi; Bengal; Burma; Cambodia. *Exp.*, ♂ 40, ♀ 56 millim.

665. **Azygophleps pusilla**, *Wlk. Cat.* vii, p. 1538; *C. & S.* no. 1596; *Butl. Ill. Het.* vi, pl. 107, fig. 9.

♂. Differs from *scalaris* in the thorax being without the yellow stripe. Fore wing without yellow stripes; the striæ very much finer; a white band from the base below the subcostal nervure to the apex. Some specimens are more or less suffused with pale brown on inner and outer areas, and some have a black streak below the cell and a series of marginal spots developed.

Hab. Bengal; Deccan; Bangalore; Nilgiris. *Exp.* 26–40 millim.

Genus ZEUZERA.

Zeuzera, *Latr. Dict. d'Hist. Nat.* xxiv, p. 186 (1804).
Zenzera, *Latr. Hist. Nat. Ins.* xiv, p. 175 (1805).
Latagia, *Hübn. Verz.* p. 196 (1818).

Type, *Z. æsculi*, Latr., from Europe.

Range. Europe; Japan; throughout India and Ceylon; Burma.

Palpi absent; antennæ as in *Duomitus*. Legs without spurs. Wings long and narrow; the neuration as in *Duomitus* except that there is an erect bar between veins 7 and 8 of hind wing at end of cell.

Sect. I. Fore wing with vein 6 from angle of cell.

A. *Hind wing with outer margin evenly rounded.*

666. **Zeuzera conferta**, *Wlk. Cat.* vii, p. 1536; *C. & S.* no. 1589; *Butl. Ill. Het.* vi, pl. 107, fig. 10.

♂. Head, thorax, and abdomen whitish; pro-, meso-, and metathorax with paired black spots; abdomen with dorsal and paired lateral black spots and ventral bands. Wings white, evenly, but rather sparsely, spotted with blue-black spots, leaving a small space at end of and beyond cell of fore wing unspotted.

Hab. Sylhet. *Exp.* 70 millim.

667. **Zeuzera indica**, *Herr.-Schäffer, Samml. aussereur. Schmett.* no. 166; *C. & S.* no. 1590.
Zeuzera paucipunctata, *Wlk. Cat.* vii, p. 1537.

♂. Differs from *conferta* in the thorax being unmarked; the basal and terminal segments of abdomen each with three dorsal blue-black streaks; each of the other segments with one dorsal streak, those on the second and third segments triangular. Fore wing with the spots fewer and large, the most conspicuous being a spot at centre of cell, one near the apex, and those on each side of vein 1 *b*. Hind wing with three large spots below the end of the cell; one between veins 1 *b* and *c*, the largest between veins 1 *c* and 2, the smallest between veins 2 and 3; a marginal series of spots, the one nearest anal angle large.

Hab. Simla; Sikhim; Sylhet. *Exp.* 96–114 millim.

B. *Hind wing with the outer margin deeply excised near anal angle.*

668. **Zeuzera postexcisa**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 18.

♂. Head, thorax, and abdomen white; collar with paired blue-black marks; tegulæ with a blue-black spot; pro-, meso-, and metathorax with paired blue-black blotches, the last with an additional spot on the vertex; abdomen with blue-black marks at sides and on vertex. Fore wing white, with numerous small round blue-black spots; the cell with few spots and those beyond it obsolescent; the marginal series prominent. Hind wing white, with some small obsolescent spots beyond the cell and some prominent blue-black spots on outer margin, those at the excision conjoined into a prominent band.

Hab. Ceylon. *Exp.* 52 millim.

Sect. II. Fore wing with vein 6 from below angle of cell; outer margin of hind wing evenly rounded.

669. **Zeuzera multistrigata**, *Moore, P. Z. S.* 1881, p. 327; *C. & S.* no. 1593.

Differs from *postexcisa* in the collar, tegulæ, and prothorax being without marks, meso- and metathorax with paired blue-black lateral spots; metathorax and each segment of abdomen fringed with black but without spots. Fore wing with the veins tinged with ochreous, the spots much more numerous; those beyond the cell

not obsolescent; the clusters at middle and end of cell and a marginal series being the most prominent. Hind wing white, with black spots in the cell and in the interspaces below and beyond it,

Fig. 212.—*Zeuzera multistrigata*, ♂. 1/1.

but none on inner area; three blue-black spots on outer margin between veins 1 *c* and 2.

Hab. Dharmsála; Sikhim; Nágas. *Exp.*, ♂ 50–62, ♀ 64–98 millim.

SECT. III. Fore wing with vein 6 from above angle of cell.

670. **Zeuzera coffeæ**, *Nietn. Edin. New Phil. Journ.* xv, 1862, p. 36; *C. & S.* no. 1588; *Moore, Lep. Ceyl.* ii, pl. 143, figs. 1, 1 *a, b* (larva).

Zeuzera oblita, *Swinh. Trans. Ent. Soc.* 1890, p. 198.

Zeuzera roricyanea, *Wlk. Journ. Linn. Soc.* vi, p. 177 (1862).

♂. Differs from *multistrigata* in the pro-, meso-, and metathorax each having a pair of small black spots; abdomen black, clothed with white hairs. Fore wing with the spots small, black, and all obsolescent except those along the costa, outer and inner margins. Hind wing with a few obsolescent small spots and a prominent marginal series from the apex to vein 2, where they are sometimes conjoined.

♀. With the spots of the fore wing fewer in number, but more prominent and tinged with metallic blue.

Larva and *pupa* red-brown. This is the "White Borer" of Coffee-planters.

Hab. Nága Hills; Rangoon; Nilgiris; Ceylon; Borneo. *Exp.*, ♂ 40, ♀ 46 millim.

Genus PHRAGMATÆCIA.

Phragmatæcia, *Newm. Zoologist*, viii, p. 2931 (1850).

Type, *P. castaneæ*, Hübn.

Range. Europe; Africa; Asia; Java; S. America.

Palpi absent; a tuft of hair on frons; antennæ of male bipectinated to two-thirds length, the branches short. Legs without spurs. Wings long and narrow; neuration as in *Azygophleps*.

671. **Phragmatæcia castaneæ**, *Hübn. Beitr.* ii. i. i. c. p. 9 (1790).
Bombyx arundinis, *Hübn. Eur. Schmett., Bomb.* figs. 200, 201.
Zeuzera innotata, *Wlk. Cat.* xxxii, p. 587.
Phragmatœcia saccharum, *Moore, Lep. Atk.* p. 87; *C. & S.* no. 1602.
Phragmatœcia minor, *Moore, Lep. Atk.* p. 87; *C. & S.* no. 1601.
Phragmatæcia minima, *Hmpsn. Ill. Het.* viii, p. 66, pl. 144, fig. 14.

Head, thorax, and abdomen brownish white. Fore wing brownish white irrorated with dark specks. Hind wing white or brownish white.

Fig. 213.—*Phragmatæcia castaneæ*, ♂. 1/1.

In some specimens the striations of the fore wing are absent.
Hab. Europe; Africa; Madagascar; China; Nilgiris; Ceylon.
Exp., ♂ 22–38, ♀ 54 millim.

672. **Phragmatæcia impura**, *Hmpsn. Ill. Het.* viii, p. 66, pl. 144, fig. 7.

♀. Head, thorax, and fore wing smoky black; abdomen and hind wing pale fuscous.
Hab. Nilgiris, S. slopes, 3000 feet. *Exp.* 36 millim.

Genus **EREMOCOSSUS**, nov.

Type, *E. fœdus*, Swinh.
Range. Karáchi.
Palpi with the third joint large and rounded; antennæ of male bipectinated to tips, the branches short. Legs without spurs,

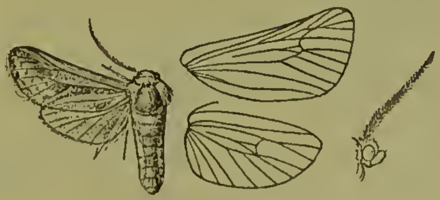

Fig. 214.—*Eremocossus fœdus*, ♂. 1/1.

the femora hairy. Wings long and narrow; fore wing with inner margin evenly curved; vein 11 given off from the subcostal

nervure. Hind wing with veins 4 and 5 from a point; 6 and 7 stalked; 8 free.

673. **Eremocossus fœdus**, *Swinh. P. Z. S.* 1884, p. 515, pl. 47, fig. 1; *C. & S.* no. 1600.

♂. Head, thorax, and abdomen ochreous white. Fore wing pale brownish ochreous, with ill-defined white longitudinal bands in and below the cell; a similar submarginal transverse band. Hind wing white.

Hab. Karáchi. *Exp.* 28 millim.

Species formerly recorded as Indian which are omitted.

Zeuzera asylas, Cram., C. & S. no. 1586, is from S. Africa.

Duomitus capensis, Wlk. Cat. vii. p. 1533. In coll. B. M. are two specimens labelled 'India,' but the 'Record' shows the locality to be doubtful.

Family ARBELIDÆ.

Allied to the *Cossidæ*. Proboscis absent; palpi slight and porrect; antennæ of male bipectinated to tips; the branches short; legs with the spurs minute or absent. Frenulum absent. Fore wing with vein 1*b* forked at the base; 1*c* absent; no areole. Hind wing with three internal veins; a simple veinlet in the cell of each wing.

Larvæ borers in wood.

Key to the Genera.

a. Hind wing with a bar between veins 7 and 8 .. 1. ARBELA, p. 314.
b. Hind wing with no bar between veins 7 and 8; the cell short .... 2. ENCAUMAPTERA, [p. 315.

Genus ARBELA.

Arbela, *Moore, P. Z. S.* 1879, p. 411.

Type, *A. tetraonis*, Moore.

Range. Peninsular India and Ceylon; Burma.

Palpi minute; antennæ bipectinated to tips in male, the branches short, simple in female. Mid and hind tibiæ slightly hairy, with minute terminal pairs of spurs. Fore wing with veins 7, 8, 9 stalked together. Hind wing with the cell of normal length; vein 6 given off below the angle; vein 8 connected with the subcostal nervure by an oblique bar near centre of cell.

674. **Arbela quadrinotata**, *Wlk. Cat.* vii, p. 1521; *C. & S.* no. 1603; *Moore, Lep. Ceyl.* ii, pl. 143, fig. 3.
Cossus abruptus, *Wlk. Cat.* xxxii, p. 584; *C. & S.* no. 1581.

Cossus tesselatus, *Moore, Lep. Atk.* p. 85; *C. & S.* no. 1604.
Zenzera pardicolor, *Moore, Lep. Atk.* p. 86; *C. & S.* no. 1595.

♂. Head and thorax rufous. Fore wing pale rufous, with numerous dark rufous bands of strigæ; a spot at end of cell and

Fig. 215.—*Arbela quadrinotata*, ♂. $\frac{1}{1}$.

those between the median nervure and vein 1 *b* being most prominent. Abdomen and hind wing fuscous.

♀. Head, thorax, and abdomen ochreous white. Fore wing ochreous white, with the markings as in male. Hind wing pale, slightly suffused with fuscous, with numerous obsolescent brown strigæ.

Hab. Calcutta; Ganjam; Ceylon. *Exp.*, ♂ 38, ♀ 40 millim.

675. **Arbela tetraonis**, *Moore, P. Z. S.* 1879, p. 411, pl. 34, fig. 3; *C. & S.* no. 1605.

♀. Differs from *quadrinotata* in the ground-colour being paler, the markings not so rufous; fore wing with a prominent submarginal series of conjoined spots; a marginal series of spots; hind wing whitish, with some brown spots and streaks below and beyond the cell; a marginal series of spots; abdomen with brown tufts.

Hab. Poona; Bombay; Raipur. *Exp.* 36–50 millim.

676. **Arbela dea**, *Swinh. Trans. Ent. Soc.* 1890, p. 199, pl. vi, fig. 7.

♂. Head whitish; antennæ, thorax, and abdomen brown. Fore wing irrorated with a few dark scales; some pale strigæ along the costa. Hind wing black-brown.

♀. Paler, with a dark spot at end of cell of fore wing.

Hab. Rangoon. *Exp.*, ♂ 24, ♀ 29 millim.

Genus **ENCAUMAPTERA**, nov.

Type, *E. stigmata*, Hmpsn.

Range. Nilgiris.

Palpi porrect; antennæ of male bipectinated to tips, the branches short. Legs hairy; tibiæ without spurs. Fore wing with veins 7, 8, 9, 10 stalked together. Hind wing with no bar between veins 7 and 8; vein 8 short; the cell short; veins 6 and 7 given off from the angle, 7 curved upwards and almost touching 8.

677. **Encaumaptera stigmata**, *Hmpsn. Ill. Het.* viii, p. 66, pl. 144, fig. 1.

♂. Mouse-grey. Fore wing with a patch of short scales below the end of the cell, with a copper-coloured longitudinal streak below it from which two black bands run to inner margin, the inner one oblique, the outer erect; a patch of short black scales

Fig. 216.—*Encaumaptera stigmata*, ♂. $\frac{1}{1}$.

beyond the end of the cell, with a small copper spot at its lower extremity; and a dark band from the costa to its upper extremity; a dark band from the costa near the apex; outer area with some dark striæ. Hind wing paler.

Hab. Nilgiris, 3500 feet. *Exp.* 40 millim.

Family HEPIALIDÆ.

Proboscis absent; palpi usually absent. Antennæ very short and filiform. Legs short and without spurs. Fore wing with vein 1 *a* forming a fork with *b* or separate; a bar from vein 12 to the costa near the base. Hind wing with 12 veins; 3 internal veins; a bar from vein 12 to the costa near the base; veinlets in the cell of both wings forked. Frenulum absent.

Larvæ internal feeders in wood or the roots of grasses &c.*

Key to the Genera.

a. Palpi present. Fore wing with no bar between vein 1 *b* and median nervure .. 1. PALPIFER, p. 316.
b. Palpi absent. Fore wing with a bar between vein 1 *b* and median nervure.
  a'. Veins 8, 9, 10 of both wings stalked .. 2. HEPIALISCUS, p. 317.
  b'. Vein 10 of both wings not stalked with 8 and 9 .... 3. PHASSUS, p. 318.

Genus **PALPIFER**, nov.

Type, *P. sexnotatus*, Moore.

Range. Himalayas; Ceylon; Tenasserim.

Palpi large, rounded, and ascending. Antennæ short and setiferous. Legs hairy; tibiæ without spurs. Fore wing without a

* Next to the *Hepialidæ* would come the *Micropterygidæ*, if the Heterocera could be arranged in a linear series.

bar between vein 1 *b* and the median nervure; veins 7 and 8 and 9 and 10 stalked in both wings, and the veinlets in cell forked.

678. **Palpifer sexnotatus,** *Moore, P. Z. S.* 1879, p. 413; *C. & S.* no. 1611.
Hepialus murinus, *Moore, P. Z. S.* 1879, p. 413; *C. & S.* no. 1608.
Hepialus taprobanus, *Moore, Lep. Ceyl.* iii, p. 545.

Fig. 217.—*Palpifer sexnotatus*, ♂. $\frac{1}{1}$.

♀. Head, pro- and mesothorax dark brown; metathorax fulvous yellow; abdomen black-brown. Fore wing dark red-brown; two white subbasal spots below the median nervure; a round white spot at centre of cell; traces of a postmedial dark line; some ochreous specks on costa near apex; a black speck at centre of inner margin. Hind wing—the basal area fulvous yellow, extending along the costa nearly to apex; the outer area dark red-brown.

Hab. Dharmsála; Sikhim; Ceylon. *Exp.* 34 millim.

*679. **Palpifer tavoyanus,** *Moore, J. A. S. B.* lv, pt. 2, 1886, p. 98; *C. & S.* no 1612.

♂. Pale vinous brown; hind part of thorax and 1st segment of abdomen clothed with ochreous hairs. Fore wing with some dark quadrate costal marks, others in and below the cell; an irregular medial band with dentate margin; a series of small marginal lunules and a black spot above outer angle; all these markings with narrow ochreous edges. Hind wing dark vinous brown, ochreous at base; cilia ochreous from anal angle to vein 4.

Hab. Tavoy. *Exp.* 77 millim.

Genus **HEPIALISCUS**, nov.

Type, *H. nepalensis*, Wlk.

Range. Himalayas.

Palpi absent. Antennæ short and filiform. Fore wing with veins 1 *a* and *c* short and slender; a bar between veins 1 *b* and *c* and the median nervure; both wings with veins 8, 9, 10 stalked, and two veinlets in the cell which are bent down and meet near centre of median nervure. Legs short and hairy; tibiæ without spurs.

In *Hepialus*, Fabr., type *humuli*, vein 8 is given off from the cell in both wings.

Larva feeding in the roots of grasses &c.

680. **Hepialiscus nepalensis,** *Wlk. Cat.* vii, p. 1557; *C. & S.* no. 1609.
Hepialus indicus, *Wlk. Cat.* vii, p. 1558; *C. & S.* no. 1606.
Hepialus pauperatus, *Wlk. Cat.* xxxii, p. 593; *C. & S.* no. 1610; *Butl. Ill. Het.* vi, pl. 108, figs. 6, 7.
Hepialus marcidus, *Butl. A. M. N. H.* (5) vi, p. 69; *C. & S.* no. 1607.

Head, thorax, and abdomen greyish or reddish brown. Fore wing greyish or ochreous brown, with four indistinct series of small dark specks or small ring-spots on indistinct pale oblique bands; a submarginal series of specks or ring-spots on pale spots. Hind wing pale fuscous.

Fig. 218.—*Hepialiscus nepalensis*, ♂. 1/1.

In the form *indicus*=*marcidus* black blotches are developed in, beyond, and below the cell of the fore wing.

Hab. Simla; Kulu; Nepal; Sikhim. *Exp.*, ♂ 44, ♀ 56 millim.

Genus PHASSUS.

Phassus, *Wlk. Cat.* vii, p. 1566 (1855).
Endoclyta, *Feld. Reis. Nov., Lep., Atl.* pl. 81, fig. 3, *Erk.* p. 4 (1867).

Type, *P. hübneri*, Geyer, from Mexico.

Range. Mexico; S. America; Africa; Japan; China; throughout India, Ceylon, and Burma; Perak; Borneo.

Palpi absent. Antennæ short and filiform. Fore and mid legs fringed with hair on both sides; hind legs aborted in male, the femur and tibia short, the latter with a curved tuft of long hairs, the tarsus more or less aborted, in some species only represented by a bristle. Both wings with veins 9 and 10 stalked; a forked veinlet in the cell, and vein 12 fringed with hair. Fore wing with a bar between vein 1 *b* and median nervure.

The prothorax, consisting of two pieces, is ankylosed to the mesothorax consisting of three pieces, the metathorax, consisting of one large piece, being freely moveable on the mesothorax.

Larvæ borers in trunks of trees.

681. **Phassus aboë**, *Moore, Lep. E. I. Co.* p. 437; *C. & S.* no. 1615; *Butl. Ill. Het.* vi, pl. 109, fig. 1.
Phassus salsettensis, *Moore, P. Z. S.* 1879, p. 412, pl. 34, fig. 5; *C. & S.* no. 1621.

♂. Head, thorax, and abdomen dull brown. Fore wing dull brown; seven indistinct dark quadrate marks on the costa; a triangular dark mark at centre of cell extending downwards along vein 2; two large dark marks in upper end of cell, two small marks in the lower end; four oblique bands of irregular ring-marks across the marginal area, the innermost bent below the costa, with a white spot at the bend; a number of irregular ring-marks

below the cell. Hind wing dark brown; two very indistinct quadrate marks at apex. The tuft on hind tibia ochreous.

♀. The first postmedial band of fore wing straighter and without the white spot inside it.

Hab. Sikhim; Bombay. *Exp.*, ♂ 70, ♀ 88 millim.

682. **Phassus punctimargo**, n. sp.

♂. Head and thorax dark red-brown; abdomen duller brown. Fore wing dark red-brown; the inner area, two oblique bands on the outer area, and the outer angle with a glossy leaden tinge; some very indistinct yellowish quadrate marks on the costa; two indistinct postmedial lines, the inner with a white spot inside it beyond the cell, the outer curved at middle; between these two lines is a series of irregular ring-marks; a similar submarginal series; traces of white specks on the outer margin; some indistinct irregular ring-marks on inner area. Hind wing pale brown, with two very indistinct dark marks near the apex; the outer margin dark.

♀. Paler red-brown; fore wing with the white spot absent; the outer postmedial line nearly straight; a series of prominent white spots and streaks on outer margin of both wings more or less conjoined in places and differently developed in the several individuals.

Hab. Sikhim. *Exp.*, ♂ 54, ♀ 90–108 millim. Type in coll. B. M.

683. **Phassus damor**, *Moore, Lep. E. I. Co.* p. 437; *C. & S.* no. 1618; *Butl. Ill. Het.* vi, pl. 109, fig. 3.
Endoclyta similis, *Feld. Reis. Nov.* pl. 81, fig. 3; *C. & S.* no. 1522.

Head, thorax, and abdomen grey-brown. Fore wing grey-brown; some dark brown quadrate marks along the costa; a triangular brown mark at centre of cell joined below the cell to an oblique irregular brown mark which extends to vein 1 and nearly fills the end of the cell and an area beyond and below it, leaving a curved pale streak from the middle to upper angle of cell; a small spot on vein 1 just before the brown band; a streak beyond the end of the cell; three double oblique bands of more or less coalesced spots, one at end of cell, the second postmedial, the third submarginal. Hind wing fuscous; some brown spots on costa and outer margin near the apex.

Hab. Sikhim. *Exp.*, ♂ 66, ♀ 88 millim.

684. **Phassus purpurascens**, *Moore, Lep. Ceyl.* ii, p. 156, pl. 143, fig. 4; *C. & S.* no. 1620.

♀. Differs from *damor* in the ground-colour of the wings being purplish. Fore wing with a white "comma" mark in the cell before the middle, another at upper end, with from one to four white specks just outside the cell; a black subbasal speck between

veins 1 *b* and *c*; no brown spot on vein 1 *b*; the triangle in the cell smaller; the oblique streak more diffused. Hind wing without markings. Hind tarsus of male represented by a bristle.

In some specimens the ground-colour of the fore wing is redder brown; a number of white specks are scattered about the wing and incomplete circular black marks appear on the costa and on each side of vein 1 *b*.

Hab. Ceylon and ? Perak. *Exp.* 114–136 millim.

685. **Phassus signifer,** *Wlk. Cat.* vii, p. 1568; *C. & S.* no. 1622; *Butl. Ill. Het.* v, pl. 109, fig. 2.
Phassus undulifer, *Wlk. Char. undescr. Het.* p. 102; *C. & S.* no. 1623.
Phassus chalybeatus, *Moore, P. Z. S.* 1879, p. 412; *C. & S.* no. 1617.

♂. Head, thorax, abdomen, and ground-colour of fore wing yellowish flesh-colour or pale grey-brown. Differs from *purpurascens* in the costal marks of the fore wing being larger and fewer; the conjoined triangle and diffused streak terminating at vein 2; a

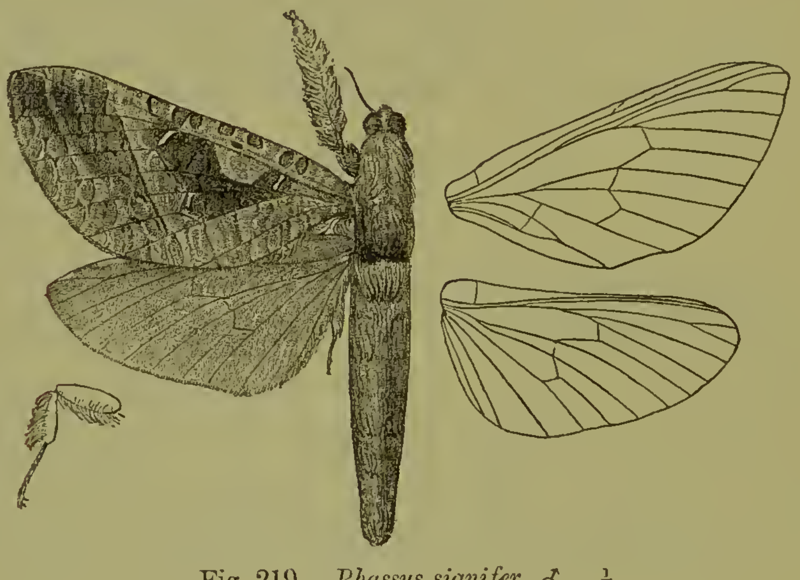

Fig. 219.—*Phassus signifer*, ♂. 1/1.

number of obscure ring-marks on inner area; the postmedial band better defined, and the submarginal spots larger and more conjoined. Hind wing flesh-coloured.

♀. Darker; fore wing with the costal marks larger; the hind wing suffused with fuscous and with obscure marks at apex.

In a Burmese specimen the ground-colour of the fore wing is pale brownish yellow, with no white spots in the cell; the hind wing ochreous brown. The species is thus extremely variable, but may chiefly be known by the darker discal markings of fore wing terminating along vein 2.

Hab. Sylhet; Bernardmyo, Burma; E. Pegu; Borneo. *Exp.*, ♂ 100, ♀ 154 millim.

686. **Phassus malabaricus**, *Moore, P. Z. S.* 1879, p. 412; *C. & S.* no. 1619.

♂. Differs from *signifer* in the markings of the fore wing being pale chestnut in colour; the costal markings small; the yellowish-white mark before the middle of the cell triangular or a longitudinal not transverse streak; the spots of the postmedial and submarginal bands rounded not elongated. Hind wing reddish fuscous.

♀. The fore wing greyish or reddish brown.

Hab. Canara; Nilgiri plateau, 6000–8000 feet. *Exp.*, ♂ 102, ♀ 126 millim.

687. **Phassus auratus**, n. sp.

♂. Head and thorax black-brown. Fore wing very dark brown; the basal half of the costa and cell brassy yellow, with some brown marks on the costa; a brassy-yellow patch at apex; an indistinct yellowish mark near centre of outer margin; a faint postmedial oblique line with a yellowish-white spot on it at veins 5 and 6. Abdomen and hind wing fuscous, the latter slightly red-brown at apex. Tuft on hind tibia ochreous.

Hab. Bernardmyo, Burma (*Doherty*). *Exp.* 42 millim. Type in coll. Elwes.

688. **Phassus albofasciatus**, *Moore, P. Z. S.* 1879, p. 413, pl. 34, fig. 8; *C. & S.* no. 1616.

♀. Head and thorax grey-brown. Fore wing grey-brown; an ill-defined greyish-white fascia from the base to the apex; the inner area reddish brown; the whole wing closely covered by waved black striæ and obscure spots and ring-marks. Abdomen and hind wing fuscous.

Hab. Nilgiri plateau, 7000–8000 feet. *Exp.* 64–84 millim.

689. **Phassus viridis**, n. sp.

♂. Head, thorax, fore and mid legs, and fore wing pale sap-green; the last with a small white spot at end of cell and a white speck beyond it. Abdomen, hind wing, and hind legs dark fuscous; the hind wing with the costal edge green. Tibial tuft fuscous.

Hab. Nilgiris. *Exp.* 86 millim. Type in Mus. Oxon.

Species formerly recorded as Indian which are omitted.

Gorgopis vilis, Wlk., C. & S. no. 1614, is a Tineid of the genus *Alavona*.

Family CALLIDULIDÆ.

A family of day-flying moths of medium size. Antennæ simple, the palpi long, with the third joint well developed. Mid tibia with one pair of long spurs, hind tibia with two pairs. Hind wing with two internal veins; 3, 4, 5 arising close together; the cell open; 6 and 7 arising not far from the base of the wing; 8 bent down and nearly touching 7 near origin of 6; a minute precostal spur.

Larva unknown.

Key to the Genera.

a. Frenulum absent	1. CLEOSIRIS, p. 322.
b. Frenulum present but minute; the retinaculum arising from below the median nervure of fore wing.	
a′. Fore wing with veins 8, 9, 10 stalked; male with a patch of raised scales below the costa of hind wing	2. CALLIDULA, p. 323.
b′. Fore wing with veins 8, 9, 10 arising from an areole	3. PTERODECTA, p. 324.
c. Frenulum long; male with the retinaculum from the subcostal nervure of fore wing; vein 6 from the middle of discocellulars; 7 and 8 from close to angle of cell	4. HERIMBA, p. 325.

Genus CLEOSIRIS.

Tetragonus, *Geyer, Hübn. Zutr.* 4, p. 17 (1832), nom. præocc.
Cleosiris, *Boisd. Spec. Gén. Lép.* i, pl. 23, fig. 3 (1836).

Type, *C. catamita*, Hübn.

Range. Throughout India, Ceylon, and Burma; Penang; Java; Borneo.

Frenulum absent. Palpi with the third joint long and obliquely porrect. Fore wing with vein 1 *b* forked at the base; veins 8 and 9 stalked, the apex acute. Hind wing with veins 6 and 7 arising very near the base; outer margin angled at vein 4.

690. **Cleosiris catamita**, *Geyer, Hübn. Zutr.* pl. iv, p. 17; *C. & S.* no. 482; *Moore, Lep. Ceyl.* ii, pl. 99, figs. 4, 4 *a*.
Cleosiris major, *Moore, P. Z. S.* 1883, p. 15; *C. & S.* no. 483.

Head, thorax, and abdomen dark yellowish red-brown. Fore wing yellowish red-brown; traces of fulvous postmedial spots. Hind wing uniform red-brown. Underside: the ground-colour yellowish, greenish, or brownish, with numerous dark striæ: fore wing with three grey spots tinged with rufous in the cell, near

base, at middle and end; an indistinct rufous oblique band from apex to vein 2; two submarginal very indistinct maculate lines; hind wing with three grey rufous-ringed spots in the cell, one near base and two near the end; four very indistinct rufous bands,

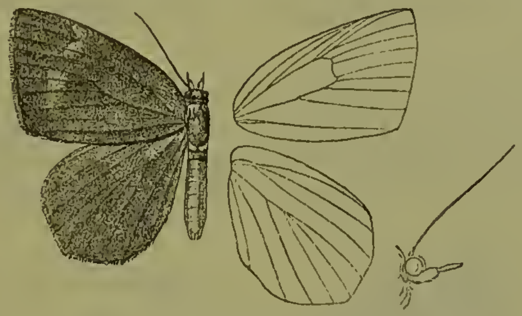

Fig. 220.—*Cleosiris catamita*, ♂. 1/1.

one medial, two postmedial, and one submarginal and maculate the two postmedial bands may coalesce, forming a more prominent irregular band; the marking of the underside may be brown instead of rufous.

Hab. Sikhim; Sylhet; Nilgiris; Ceylon; Burma; Andamans; Nicobars; Tenasserim; Penang; Java. *Exp.* 40–48 millim.

Genus **CALLIDULA**.

Callidula, *Hübn. Verz.* p. 66 (1818).
Datanga, *Moore, Lep. Atk.* p. 21 (1879).

Type, *C. petavia*, Cram.

Range. Afghanistan; Sikhim; Assam; Burma; Malacca; Philippines; Borneo; Sumatra; Java.

Frenulum present but minute; the retinaculum arising from below the median nervure of fore wing. Palpi with the third joint somewhat long and upturned. Fore wing with vein 1 *b* not forked at the base. Veins 8, 9, 10 stalked. Hind wing with veins 6 and 7 arising not so near the base as in *Cleosiris*; male with a large patch of raised scales below the middle of vein 8.

691. **Callidula minor**, *Moore, Lep. Atk.* p. 21; *C. & S.* no. 486.

♂. Dark red-brown. Fore wing with an oblique nearly regular orange band from the costa beyond the middle to vein 2 near outer margin; some specimens with traces of a submarginal orange band. Underside yellowish, with numerous dark striæ; fore wing with a grey dark-ringed spot at centre of cell and two at its end which are sometimes conjoined; some red at end and beyond the cell; hind wing with a grey dark-ringed spot at centre of cell; a larger one at end of cell; an indistinct waved red and grey postmedial line. Cilia orange.

Settles on the upperside of leaves, with the wings raised over

the back, just as does the Hesperid *Astictopterus xanites*, from which it is difficult to distinguish the present species.

Hab. Karen Hills; Moulmein. *Exp.* 34 millim.

92. **Callidula erycinoides**, *Wlk. Char. undescr. Het.* p. 3; *C. & S.* no. 481.

Differs from *minor* in the band of the fore wing being pale yellow and nearly reaching the outer angle, near which it is curved and attenuated. Underside: fore wing dusky yellow, suffused with fuscous on outer half and rufous at apex, the costa with dark

Fig. 221.—*Callidula erycinoides*, ♂. $\frac{1}{1}$.

striæ, or wholly suffused with rufous with dark striæ; the band as on upperside; a white black-ringed spot in cell near the base and transverse streaks at middle and end. Hind wing yellowish, suffused and striated with rufous; two grey spots at end of cell; a waved black postmedial line. Both wings with a marginal series of white specks; the cilia pale near apex of each wing.

Hab. Sikhim; Buxar; Nágas. *Exp.* 46 millim.

693. **Callidula attenuata**, *Moore, Lep. Atk.* p. 21; *C. & S.* no. 485.

Differs from *erycinoides* in the band of the fore wing being red, and from *minor* in its narrowing towards outer margin and being present on the underside; the cilia pale red.

Hab. Sikhim; Margharita, S.E. of Sadiya, Assam; Khásis; E. Pegu. *Exp.* 40 millim.

Genus **PTERODECTA.**

Pterodecta, *Butl. A. M. N. H.* (4) xx, p. 399 (1877).

Type, *P. anchora*, Moore.

Range. Japan; Himalayas from Kángra to Bhutan.

Palpi with the third joint porrect and long. Frenulum present, but minute, the retinaculum from below the median nervure of fore wing. Fore wing with vein 1 *b* forked at the base; 9 arising from 10 and anastomosing with 8 to form an areole; the apex acute; the outer margin angled at vein 6. Hind wing with veins 6 and 7 arising near the base; the outer margin angled at vein 2.

694. **Pterodecta anchora**, *Moore, Pagenst. JB. Nassau. Ver.* 1887, p. 238, pl. ii, fig. 24; *C. & S.* no. 480.

Head, thorax, abdomen, and wings dark brown. Fore wing with an orange-yellow spot below the cell between veins 2 and 3; an orange-yellow post-medial curved band from the costa to vein 2, sending a projection inwards along vein 3 so as nearly to join the spot. Cilia fulvous. Underside yellowish brown, striated with black; the fore wing yellow, except the outer area; two small white black-ringed spots in the cell, a larger one on a black patch at end, and a black patch below the end of cell. Hind wing with a grey spot at end of cell.

Fig. 222.—*Pterodecta anchora*, ♂. 1/1.

Hab. Himalayas from Kulu to Bhutan, 5000–10,000 feet. *Exp.* 40 millim.

Genus HERIMBA.

Herimba, *Moore, Lep. Atk.* p. 20 (1879).

Type, *H. atkinsoni*, Moore.

Range. Sikhim; Burma.

Palpi upturned, with the third joint of moderate length and somewhat porrect. Fore wing with vein 1 *b* forked at the base, 6 from the middle of the discocellulars; 7 and 8 from close to the upper angle of cell; 9 and 10 arising close together before the end of cell and anastomosing shortly. Hind wing with veins 6 and 7 arising not very near the base, 8 almost touching them close to their origin. Frenulum long; retinaculum in male arising from the subcostal nervure of fore wing.

695. **Herimba atkinsoni**, *Moore, Lep. Atk.* p. 21, pl. 2, fig. 3; *C. & S.* no. 484.

♂. Glossy black-brown, with a golden-brown tinge. Fore wing with golden-brown specks along the costa; an oblique white medial band consisting of a spot at end of cell, a trifid spot below it, and small spot above vein 1 *b*; a small white subapical spot. Hind wing speckled with golden brown; a minute white spot between veins 5 and 6. Underside with numerous golden-brown strigæ.

Fig. 223.
Herimba atkinsoni, ♂. 1/1.

Hab. Sikhim; Burma. *Exp.* 33 millim.

Family DREPANULIDÆ.

Small or moderate-sized moths of somewhat slender build, generally with the apex of fore wing falcate.

Palpi slender and slightly scaled, often very minute. Fore wing with vein 1 *b* forked at the base; 1 *c* absent; 5 from close to the lower angle of cell. Hind wing with one or two internal veins; 1 *a* short when present; 5 from near lower angle of cell; the discocellulars angled; the origin of veins 6 and 7 before the angle of cell; 8 bent down and nearly or quite touching 7.

Fig. 224.—Larva of *Teldenia vestigiata*. $\frac{1}{1}$. (From Moore, Lep. Ceyl. ii, pl. 124, fig. 1 *b*.)

Larva smooth, with the anal prolegs absent*; the anal somite usually with a long process, the others often humped. Spins a cocoon amongst leaves.

Key to the Genera.

a. Proboscis present.
  a'. Frenulum present.
    a^2. Fore wing with the apex rounded. — 2. MACROCILIX, p. 329.
    b^2. Fore wing with the apex acute.
      a^3. Fore wing with the apex produced upwards. . . . . 16. CAMPTOCHILUS, p. 351.
      b^3. Fore wing with the apex not produced upwards.
        a^4. Fore wing with vein 10 stalked with 7, 8, 9; no areole.
          a^5. Hind wing with the outer margin rounded.
            a^6. Both wings with the discocellulars nearly straight. — 1. EUCHERA, p. 327.
            b^6. Both wings with the discocellulars much angled. — 3. MACRAUZATA, p. 330
          b^5. Hind wing with the outer margin angled at vein 3 . . — 4. AUZATA, p. 331.
        b^4. Fore wing with veins 9 and 10 anastomosing with 7 and 8 to form an areole.
          a^5. Palpi slight and porrect.
            a^6. Hind wing with the anal angle produced and lobed — 5. DITRIGONA, p. 331.

* Except in *Euchera*.

b^6. Hind wing with the anal angle rounded.
  a^7. Antennæ not thickened and flattened ...... 8. DREPANA, p. 333.
  b^7. Antennæ thickened and flattened .... 7. LEUCODREPANA, p. 333.
b^5. Palpi upturned, reaching vertex of head.
  a^6. Hind wing with the anal angle rounded .... 6. TELDENIA, p. 332.
  b^6. Hind wing with the anal angle highly excised .. 10. THYMISTADA, p. 343.
c^5. Palpi long, porrect, and thickly scaled. Fore wing with veins 8 and 9 from end of areole............ 9. SPICA, p. 342.
b'. Frenulum absent.
  a^2. Fore wing with an areole.
    a^3. Hind wing with the outer margin rounded .... 11. DEROCA, p. 344.
    b^3. Hind wing with the outer margin angled at vein 6.......... 12. PHALACRA, p. 345.
  b^2. Fore wing with no areole........ 13. DRAPETODES, p. 346.
b. Proboscis and frenulum absent.
  a'. Fore wing with veins 9, 10, 11 stalked, 9 anastomosing with 7 and 8 to form the areole .... 15. ORETA, p. 347.
  b'. Fore wing with veins 8, 9, 10 stalked. 14. CILIX, p. 347.

Genus EUCHERA.

Euchera, *Hübn. Zutr.* 3, p. 29, no. 260 (1825).
Cyclidia, *Guen. Sp. Gén. Lép. Phal.* i, p. 62 (1857).

Type, *E. substigmaria*, Hübn.

Range. Japan; China; Himalayas; Assam; Burma; Sumatra.

Palpi upturned, reaching vertex of head. Antennæ thickened and laminate. Mid tibiæ with one pair of short spurs; hind tibiæ with two pairs. Fore wing broad; the costa arched; the apex slightly acute; vein 1 *a* forming a fork with 1 *b*, and then leaving it again as a spur; 5 from some way above the angle of cell; 6 from below the upper angle; 7, 8, 9, 10 stalked. Hind wing with the costa slightly excised before the apex; the discocellulars nearly straight; 5 from some way above lower angle of cell.

696. **Euchera substigmaria**, *Hübn. Zutr.* 3, p. 29, no. 260, figs. 519, 520; *C. & S.* no. 3119.

Head black; thorax white; abdomen brownish white. Fore wing pale grey; traces of two antemedial, one medial, and two postmedial pale waved lines; an oblique line from the apex crossing the postmedial lines to centre of inner margin, beyond which the area is whiter; two pale brown blotches above inner margin near outer angle; a waved submarginal line formed of dark specks

with two black specks inside it at outer angle. Hind wing white; a large round black spot at end of cell; indistinct medial and postmedial brown bands; a submarginal waved line of black specks.

Fig. 225.—*Euchera substigmaria*, ♂. $\frac{1}{1}$.

Larva with 10 prolegs: black with head and anal segment ringed with black; a sublateral white line; series of white and yellow lateral transverse streaks.

Hab. Dharmsála; Nepal; Sikhim; Assam; Burma. *Exp.* 82 millim.

697. **Euchera rectificata**, *Wlk. Cat.* xxiv, p. 1142; *C. & S.* no. 3128.
Cyclidia patulata, *Wlk. Cat.* xxxv, p. 1537.
Cyclidia muricolaria, *Wlk. Cat.* xxvi, p. 1483; *C. & S.* no. 3124.

Head and thorax greyish brown. Fore wing greyish brown; two antemedial waved white lines, with traces of another between them; a similar postmedial set of lines, but doubly curved; a pale submarginal line, with a series of large brown spots beyond it connected by a waved line; a white spot at end of cell. Hind wing grey, irrorated with brown scales; medial and postmedial brown bands obsolete towards the costa; a submarginal series of brown spots connected by a waved line.

Hab. Sikhim; Nágas. *Exp.* 76–84 millim.

698. **Euchera pitmani**, *Moore, J. A. S. B.* lv, pt. 2, 1886, p. 99; *C. & S.* no. 3118.

Head, thorax, and abdomen white; frons black; antennæ ochreous. Wings white; fore wing with some fuscous marks on basal half of costa; a subbasal narrow line; a broad medial fuscous band, the discocellulars and veins crossing it white; a postmedial curved line and submarginal series of spots, beyond which is a

series of smaller black spots and fuscous series on margin. Hind wing white, with postmedial and submarginal series of fuscous spots; a series of black spots before the margin.

Hab. Tavoy. *Exp.*, ♂ 66, ♀ 74 millim.

Genus **MACROCILIX.**

Macrocilix, *Butl. Ill. Het.* vi, p. 18 (1886).

Type, *M. mysticata*, Wlk.

Range. Himalayas; Khási Hills; Borneo.

Palpi very minute; proboscis present. Mid tibia with one pair of spurs; hind tibia with two pairs. Fore wing with the apex rounded; the discocellulars highly angled; vein 6 from some way below the angle of cell; 7, 8, 9 stalked.

Sect. I. Antennæ with the branches long in male, short in female. Fore wing with veins 10 and 11 stalked and not forming an areole with 9.

699. **Macrocilix mysticata**, *Wlk. Cat.* xxvi, p. 1617; *Butl. Ill. Het.* vi, pl. 106, fig. 4; *C. & S.* no. 1258.

Head, thorax, and abdomen white; vertex of thorax and abdomen fulvous. Wings semitransparent white. Fore wing with a broad somewhat irregular golden-brown postmedial band from the subcostals to inner margin, with a white streak on the discocellulars and short streaks on veins 3 and 4; two pale lines on the band from the cell to inner margin; two submarginal

Fig. 226.—*Macrocilix mysticata*, ♂. $\frac{1}{1}$.

lunulate fuscous interrupted bands. Hind wing similar; the band sending a tooth outwards near inner margin, and another along the inner margin halfway to the base with a silvery line on it; some silvery scales on the outer edge of the band near inner margin; a yellow patch on the outer margin near anal angle with three black specks on it.

Hab. Dharmsála; Sikhim. *Exp.* 42 millim.

SECT. II. Antennæ of male thickened and flattened by appressed serrations. Fore wing with veins 10 and 11 from cell; 10 anastomosing with 8 and 9 to form an areole.

700. **Macrocilix orbiferata**, *Wlk. Cat.* xxiv, p. 1126.
Argyris insignata, *Moore, P. Z. S.* 1867, p. 645; *C. & S.* no. 1262.

♂. Head, thorax, and abdomen white; antennæ ochreous. Fore wing white; a broad fuscous streak on basal half of costa; an antemedial irregular indistinct fuscous band; a similar post-medial broader band, its median portion traversed by a white line; a maculate submarginal band. Hind wing white; a postmedial band obsolescent towards costa, broad towards inner margin, and traversed by a white line; a yellow patch at anal angle, with sub-marginal and marginal series of dark spots and strigæ on it.

Hab. Sikhim; Bhutan; Khásis; Borneo. *Exp.* 27 millim.

Genus MACRAUZATA.

Macrauzata, *Butl. Ill. Het.* vii, p. 43 (1889).

Type, *M. fenestraria*, Moore.

Range. Japan; N.W. Himalayas; Sikhim.

Palpi very minute; proboscis present. Antennæ with short pectinations in female; mid and hind tibiæ with very short terminal pairs of spurs. Frenulum present. Fore wing with the apex falcate and acute, the discocellulars highly angled; vein 6 from angle of cell; 7, 8, 9, 10 stalked and from some way before the angle.

701. **Macrauzata fenestraria**, *Moore, P. Z. S.* 1867, p. 639; *C. & S.* no. 3504.

♀. Yellowish white. Fore wing with a very large irregular hyaline patch occupying the end of the cell and the area beyond

Fig. 227.—*Macrauzata fenestraria*, ♀. 1/1.

and below it, the veins crossing it yellowish; two fulvous lines

crossing the wing on the inner edge of the hyaline area and two running round its outer edge, then bent before the inner margin, some dark ferruginous on the upper edge of the patch; a waved submarginal pale line. Hind wing similar; the hyaline patch much more irregular.

Hab. Japan; Kángra; Sikhim. *Exp.* 60–66 millim.

Genus AUZATA.

Auzata, *Wlk. Cat.* xxvi, p. 1620 (1862).

Type, *A. semipavonaria*, Wlk.

Range. Himalayas.

Palpi slight and upturned; proboscis present. Antennæ slightly thickened and flattened. Frenulum present. Fore wing with the apex acute; outer margin angled slightly at vein 3; vein 6 from just below the angle of cell; veins 7, 8, 9, 10 stalked and from the angle. Hind wing angled at vein 3 and crenulate from thence to anal angle.

702. **Auzata semipavonaria**, *Wlk. Cat.* xxvi, p. 1620; *Butl. Ill. Het.* vi, pl. 106, fig. 1; *C. & S.* no. 1257.

Head, thorax, and abdomen white. Fore wing white; two waved and curved indistinct antemedial brownish-fuscous lines interrupted at the veins; two similar postmedial lines with a large "comma"-shaped yellow-brown mark on them from veins 1 to 5,

Fig. 228.—*Auzata semipavonaria*, ♂. $\frac{1}{1}$.

with a black spot centred with silvery blue on it at the beginning of the "tail"; submarginal and marginal similar lines. Hind wing white, with three similar pairs of lines, but without the spot; traces of a third line outside the postmedial pair.

Hab. Simla; Kulu; Sikhim. *Exp.*, ♂ 42, ♀ 50 millim.

Genus DITRIGONA.

Ditrigona, *Moore, Lep. Atk.* p. 58 (1879).

Type, *D. triangularia*, Moore.

Range. Sikhim.

Palpi minute, proboscis present. Antennæ with the branches rather short; mid tibia with one pair of long spurs, hind tibia

with two pairs. Frenulum present. Fore wing with the apex produced and acute; vein 6 from the areole, which is large and formed by vein 10 anastomosing with 8 and 9. Hind wing with the anal angle much produced and slightly lobed.

703. **Ditrigona triangularia,** *Moore, P. Z. S.* 1867, p. 612; *C. & S.* no. 4024.

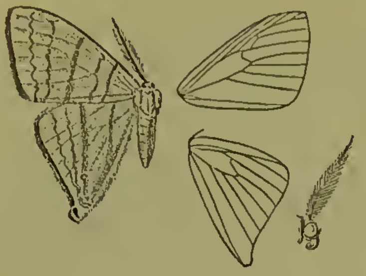

Fig. 229.—*Ditrigona triangularis,* ♂. 1/1.

Head, thorax, and abdomen white. Fore wing white; two waved, slightly oblique, antemedial fuscous lines; a straight medial line and two waved postmedial lines; costa ochreous. Hind wing with an antemedial nearly straight line; a medial straight line and two postmedial slightly waved lines, all meeting near anal angle; a black spot on the anal lobe. Cilia of both wings fuscous.

Hab. Sikhim. *Exp.*, ♂ 36, ♀ 38 millim.

Genus **TELDENIA.**

Teldenia, *Moore, Lep. Ceyl.* ii. p. 119 (1882).

Type, *T. vestigiata*, Butl.

Range. Sikhim; Nága Hills; Ceylon.

Palpi slender, reaching the vertex of head; proboscis present. Antennæ with the branches long in male, ciliate in female. Mid and hind tibiæ with terminal pairs of spurs. Frenulum present. Fore wing with the apex very slightly produced and acute; veins 6, 7, and 10 from the areole, which is long and formed by vein 9 anastomosing with 8. Hind wing rounded.

704. **Teldenia vestigiata,** *Butl. A. M. N. H.* (5) vi, 1880, p. 222; *id. Ill. Het.* vi, pl. 118, fig. 10; *C. & S.* no. 3601.
Teldenia alba, *Moore, Lep. Ceyl.* ii. p. 120; *C. & S.* no. 3600.

♂. Pure white; fore wings with a postmedial series of ochreous spots, inwardly bordered by dark lunules, the four upper spots placed in pairs, the three lower recurved towards the base; two indistinct interrupted waved lines beyond the spots, the inner line recurved towards base near inner margin; a series of marginal black specks.

Fig. 230.—*Teldenia vestigiata,* ♂. 1/1.

Larva green, with subdorsal series of purple spots and a lateral series of black spots; dorsal tubercles on 1st and 11th somites, and a slender process on 3rd somite; a long slender process projecting backwards from 11th somite.

Hab. Sikhim; Nágas; Ceylon. *Exp.* 25 millim.

Genus **LEUCODREPANA**, nov.

Type, *L. idæoides*, Hmpsn.
Range. Sikhim ; Nága Hills.

Proboscis present; palpi porrect, slender, and reaching beyond the frons; antennæ thickened and flattened in both sexes. Mid tibiæ with one pair of long spurs, hind tibiæ with two pairs. Frenulum present. Fore wing with the apex somewhat acute; vein 6 given off after the angle of cell; 7 from end of areole, which is long, and formed by 9 and 10 anastomosing strongly with 8; 11 from the cell.

705. **Leucodrepana idæoides**, n. sp.

Fig. 231.—*Leucodrepana idæoides*, ♂. ½.

Pure shining white; fore wing with an indistinct subbasal fuscous line; both wings with two oblique antemedial waved lines and two postmedial, angled below the costa of fore wing and bent towards inner margin of hind wing; a waved submarginal and fine marginal line.

Hab. Sikhim, 10,000 feet (*Möller*, *Elwes*). *Exp.* 33 millim. Type in coll. Elwes.

706. **Leucodrepana nivea**, n. sp.

♀. Differs from *idæoides* in being of a less shining white; fore wing with no subbasal line; the first pair of lines more oblique; the outer area with three waved lines at even distances apart.

Hab. Sikhim (*Elwes*). *Exp.* 31 millim. Type in coll. Elwes.

707. **Leucodrepana obliquilinea**, n. sp.

Differs from the two preceding species in having the first pair of lines exceedingly oblique, arising from near the apex, and almost straight; the three outer lines disposed as in *idæoides*, but almost straight.

Hab. Sikhim (*Möller*); Nága Hills, 6000 feet (*Doherty*). *Exp.*, ♂ 30, ♀ 34 millim. Type in coll. Elwes.

Genus **DREPANA**.

Drepana, *Schr. Faun. Boica*, ii, 2, p. 155 (1802).
Albara, *Wlk. Cat.* xxxv, p. 1566 (1866).
Agnidra, *Moore, P. Z. S.* 1867, p. 618.
Peridrepana, *Butl. Ill. Het.* vii, p. 43 (1889).
Callidrepana, *Feld. Reis. Nov. Lep.* pl. 83, fig. 11, *Erkl.* p. 2 (1867).

Type, *D. falcataria*, Linn., from Europe.
Range. N. America; Europe; Japan; Himalayas; Nilgiris; Ceylon; Assam Hills; Burma; Sumatra; Borneo; Solomon Islands.

Palpi slight and upturned; proboscis present. Frenulum present.

Fore wing with the apex generally produced and acute; veins 6 and 11 may be given off from the cell or from the areole, which may be formed by the anastomosis of veins 8, 9, and 10, or 8 and 9 only.

SECT. I. (*Drepana*). Fore wing with vein 10 given off after the areole; 11 from the cell. Antennæ bipectinate in male, ciliated in female; mid tibia with one pair of spurs, hind tibia with two pairs.

A. *Fore wing with the apex falcate, the areole long.*

708. **Drepana pallida**, *Moore, Lep. Atk.* p. 84; *C. & S.* no. 1239.

Fig. 232.—*Drepana pallida*, ♂. 1/1.

Pale brown. Fore wing with traces of several antemedial lines; a dark spot at end of cell; an oblique fulvous band from near apex to inner margin beyond the middle, slightly bent near inner margin; a series of indistinct submarginal dark specks. Hind wing similar, the fulvous band curved.

Hab. Sikhim. *Exp.*, ♂ 44, ♀ 60 millim.

709. **Drepana hyalina**, *Moore, P. Z. S.* 1888, p. 401; *Butl. Ill. Het.* vii, pl. 125, fig. 1.

White, with a slight fuscous tinge. Fore wing crossed by two waved fuscous antemedial lines; a dark speck at lower angle of cell; two waved lines beyond the cell, the outer line expanding into a band towards inner margin; submarginal and marginal series of indistinct specks. Hind wing with one antemedial, two post-medial, and one submarginal indistinct waved lines.

In a Kulu specimen the markings are almost obsolete.

Hab. Dharmsála; Kulu. *Exp.* 43 millim.

710. **Drepana rufofasciata**, n. sp.

Head, thorax, and abdomen pale brown. Fore wing pale brown, with a broad median rufous band occupying half the wing, and bearing two white spots on the costa, from which indistinct pale waved lines proceed to inner margin; a round grey-centred dark spot at lower angle of cell; a submarginal series of black specks. Hind wing pale brown, with traces of two antemedial pale lines; a black speck at end of cell; three postmedial waved lines.

Hab. Sikhim (*Elwes*). *Exp.* 43 millim. Type in coll. Elwes.

711. **Drepana ochreipennis**, n. sp.

Reddish ochreous, clouded with reddish brown. Fore wing crossed by ante- and postmedial whitish narrow bands or series of small spots; a dark speck at end of cell. Hind wing with a speck at end of cell, and a postmedial white band or series of spots.

Hab. Sikhim (*Möller*). *Exp.*, ♂ 28, ♀ 30 millim. Type in coll. Elwes.

B. *Fore wing with the apex not falcate.*

712. **Drepana quinaria**, *Moore, P. Z. S.* 1867, p. 618; *C. & S.* no. 3142.

♂. White, with a very slight ochreous tinge; the branches of antennæ ochreous; fore wing crossed by about seven very indistinct pale waved lines; hind wing by one medial and three postmedial similar lines.

♀. Purer white, with the lines slightly better marked.

Hab. Sikhim, 7000–10,000 feet. *Exp.*, ♂ 38, ♀ 36 millim.

713. **Drepana innotata**, n. sp.

♀. Head, thorax, and abdomen white. Wings hyaline, with a few scattered white scales and absolutely without markings.

Hab. Kulu (*Graham-Young*). *Exp.* 36 millim. Type in coll. Elwes.

C. *Fore wing falcate; the areole short; vein 6 from angle of cell.*

714. **Drepana fasciata**, n. sp.

♀. Head, antennæ, and legs brown; thorax and abdomen white. Wings silvery white, crossed by ante- and postmedial straight ferruginous lines; a waved submarginal indistinct line; cilia and costa of fore wing ferruginous.

Hab. Sikhim (*Möller*). *Exp.* 48 millim. Type in coll. Elwes.

SECT. II. (*Albara*). Fore wing with vein 10 from end of areole; 11 from the cell.

A. *Antennæ simple in female; the distal portion serrate in male.*

715. **Drepana specularia**, *Wlk. Cat.* xxxv, p. 1553; *Butl. Ill. Het.* vi, pl. 106, fig. 3; *C. & S.* no. 1255.

Red-brown; the head chestnut. Fore wing with traces of two antemedial and two postmedial waved lines; a pale spot in the cell, two below the origin of vein 2, a large patch in and beyond the end of cell, the discocellulars and veins 3 and 4 where they cross it dark; postmedial and submarginal indistinct waved lines.

Hind wing with a semihyaline patch in and beyond the end of cell, the veins crossing it dark; traces of two antemedial, two postmedial, and a submarginal dark waved line.

Hab. Sikhim. *Exp.* 46 millim.

716. **Drepana discispilaria,** *Moore, P. Z. S.* 1867, p. 619; *C. & S.* no. 1253.

Agnidra usta, *Butl. Ill. Het.* vi, p. 17, pl. 106, fig. 2; *C. & S.* no. 1256.

♂. Differs from *specularia* in the head being dark brown; the pale patches at end of cell of both wings replaced by a round dark spot with grey centre.

Hab. Sikhim. *Exp.* 44 millim.

717. **Drepana perhamata,** n. sp.

♀. Fore wing with the apex extremely produced. Head, thorax, and legs dull red-brown. Fore wing with a broad purplish-fuscous medial band with waved edges; an indistinct waved postmedial line; the outer area suffused with fuscous, the nervules crossing it pale. Hind wing with the basal area fuscous, its outer edge waved; two pale specks at end of cell; an indistinct postmedial waved line.

♂. Much more uniform purple; some brown appearing near the postmedial waved lines of both wings.

Hab. Nága and Jaintia Hills. *Exp.*, ♂ 38, ♀ 42 millim. Type in coll. Elwes.

718. **Drepana muscularia,** *Wlk. Cat.* xxxv, p. 1554; *C. & S.* no. 1254.

♂. Dark purple-grey; the vertex of head fulvous. Fore wing with the costa fulvous; antemedial, postmedial, and submarginal waved dark lines; a large patch of vinous red occupying the lower half of outer area. Hind wing similar, the whole outer area vinous.

Hab. Sikhim. *Exp.* 42 millim.

719. **Drepana violacea,** *Butl. Ill. Het.* vii, p. 42, pl. 124, fig. 7.

♂. Pale purplish grey; the head brown. Fore wing with the costa fulvous; both wings with traces of a faint antemedial line and an oblique well-defined fulvous postmedial line, which becomes medial on the hind wing; cilia pale brown at tips.

Hab. Dharmsála. *Exp.* 38 millim.

720. **Drepana lilacina,** *Moore, P. Z. S.* 1888, p. 401; *Butl. Ill. Het.* vii, pl. 124, figs. 8, 9; *C. & S.* no. 1238 B.

Drepana simillima, *Moore, P. Z. S.* 1888, p. 402; *C. & S.* no. 1242 A.

Pale brownish grey; the antennæ darker. Fore wing with an indistinct oblique antemedial chestnut line; a chestnut postmedial line from apex to inner margin beyond the middle; some dark

submarginal specks. Hind wing with subbasal and medial straight chestnut lines.

One specimen from Sikhim has the chestnut lines very broad and prominent, and a chestnut band at middle of abdomen.

Hab. Dharmsála; Kángra; Sikhim. *Exp.* 40 millim.

721. **Drepana orphnina,** n. sp.

♂. Uniform dark purplish grey. Fore wing with traces of a dark line on discocellulars, and two antemedial, three postmedial, and one submarginal line. Hind wing with traces of one antemedial, three postmedial, and one submarginal line. Underside pale, the costa of fore wing tinged with red.

Hab. Nága Hills, 6000 feet (*Doherty*). *Exp.* 32 millim. Type in coll. Elwes.

722. **Drepana prunicolor,** *Moore, Lep. Atk.* p. 288.

♂. Dark purplish grey. Fore wing with an acutely angled yellowish antemedial line; a similar postmedial line met at the angle by a yellow line from the apex; a pale submarginal line. Hind wing with slightly curved subbasal, medial, and submarginal yellowish lines.

Hab. Sikhim. *Exp.* 36 millim.

*723. **Drepana postica,** *Moore, Lep. Atk.* p. 84, pl. 2, fig. 8; *C. & S.* no. 1241.

♂. Head, thorax, abdomen, and fore wing purplish brown, the last with the base and outer angle yellowish; an indistinct antemedial line; an oblique dark line from near the apex to centre of inner margin; a submarginal series of specks. Hind wing pale yellow, with ante- and postmedial curved darker lines; some submarginal specks; both wings with a white speck at end of cell.

Hab. Sikhim. *Exp.* 37 millim.

724. **Drepana vinacea,** *Moore, Lep. Atk.* p. 85; *C. & S.* no. 1244.

♂. Head, thorax, and abdomen dark purplish grey. Fore wing reddish brown, suffused with purplish on inner and outer areas; a double oblique line from near the apex to inner margin beyond the middle; an indistinct waved submarginal line. Hind wing entirely suffused with purplish; the double line medial; traces of two submarginal lines. Underside ochreous, with a speck at end of cell of each wing; purplish blotches beyond the oblique line of the fore wing; hind wing with a curved medial line.

Hab. Sikhim. *Exp.* 42 millim.

725. **Drepana fenestraria,** *Moore, P. Z. S.* 1867, p. 618; *C. & S.* no. 3141.

♀. Head, thorax, and abdomen pale ochreous. Fore wing pale

ochreous, slightly suffused with fuscous; an oblique black line from lower angle of cell to inner margin; an oblique postmedial line from apex; a trifid hyaline patch before the postmedial line from vein 2 to 5, the latter being bent; a lunulate submarginal pale line; a marginal fine dark line. Hind wing pale ochreous, with straight ante- and postmedial lines and waved submarginal line, the area between the two latter suffused with fuscous; a fine marginal line.

Hab. Sikhim. *Exp.* 36 millim.

726. **Drepana trilinearia,** *Moore, P. Z. S.* 1867, p. 618; *C. & S.* no. 3143.

♂. Differs from *fenestraria* in the head being black. Fore wing with the basal and costal areas suffused with fuscous; no oblique line from lower angle of cell; no hyaline patch; vein 5 straight, the postmedial line angled below the costa; the submarginal line of both wings straight. Hind wing with the inner area slightly suffused with fuscous; the ante- and postmedial lines indistinct.

Hab. Sikhim. *Exp.* 32 millim.

727. **Drepana excisa,** n. sp.

♂. Fore wing with the outer margin deeply excised below the apex; hind wing angled at vein 4; hind tibiæ with one pair of spurs.

Differs from *fenestraria* in not being suffused with fuscous: fore wing with the hyaline patch extending from veins 2 to 4; vein 5 straight; the postmedial line curved. Hind wing with the submarginal line straight.

Hab. Sikhim; Nága Hills, 1500 feet (*Doherty*). *Exp.* 28 millim. Type in coll. Elwes.

B. (Callidrepana). *Antennæ bipectinated in both sexes, the branches long in the male.*

728. **Drepana argenteola,** *Moore, Lep. E. I. Co.* p. 369 (1859).
Drepana patrana, *Moore, P. Z. S.* 1865, p. 816; *C. & S.* no. 1240.
Drepana biocularis, *Moore, Lep. Atk.* p. 84, pl. 2, fig. 9; *C. & S.* no. 1236.
Drepana bracteata, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 5.

Head fulvous; thorax and abdomen pale fawn-colour. Wings pale or dark fawn-colour. Fore wing with traces of an antemedial waved line; a dark patch on the discocellulars, often wanting; a double brown line from the apex to inner margin beyond the middle; a series of submarginal dark specks on the veins; the area in the cell and below the costa, the veins, the outer edge of the oblique line, and the outer margin spangled with brilliant bluish-silver scales. Hind wing with a double straight medial line not reaching the

costa; a postmedial series of specks; silvery scales on outer edge of the line and on outer margin.

The form *bracteata* from Ceylon is much darker, with the discocellular patch of the fore wing broken up into three small spots, and with more silvery irroration.

Hab. Sikhim; Burma; Ceylon; Java. *Exp.*, ♂ 35–45, ♀ 50 millim.

729. **Drepana argentilinea**, *Wlk. Cat.* xxxii, p. 394.
Callidrepana argentifera, *Druce, P. Z. S.* 1888, p. 574, pl. 29, fig. 3.

♂. Ochreous white. Fore wing with a dark line with a few silvery scales on it along basal two-thirds of costa; two dark streaks at end of cell; an elongate black spot on discocellulars with some silvery scales on it; a dark streak from upper angle of cell to near apex, then curved round and waved to inner margin and with silvery scales on it; an indistinct streak beyond the cell; a marginal silvery line; the marginal area slightly suffused with orange. Hind wing with a silvery submarginal line towards anal angle, with orange suffusion between it and margin.

Hab. Burma; Singapore; Sula; Solomons. *Exp.* 26 millim.

730. **Drepana pulcherrima**, n. sp.

♂. Head bright chestnut; thorax and abdomen ochreous brown. Fore wing pale olive-green suffused with chestnut, especially on inner basal area; a waved and angled indistinct antemedial black line; a postmedial oblique chestnut line from costa before apex to inner margin beyond the middle, with an indistinct black line before it angled below the costa; a submarginal series of black specks; numerous silvery and a few black scales below the costa, on inner basal area, and on each side of the oblique line. Hind wing with the costal area yellow, without markings; the inner half of wing chestnut-brown, irrorated with silvery scales; black ante- and postmedial lines, the latter followed by a red-brown band, then a black-brown band, and a marginal red-brown band with some yellow lunules at anal angle; both wings with a marginal silvery line. Cilia of both wings red-brown tipped with silver. Underside yellow, with a medial black band across the hind wing.

Allied to *D. micacea*, Wlk., from Borneo.

Hab. Tenasserim Valley, Burma (*Doherty*). *Exp.* 42 millim. Type in coll. Druce.

731. **Drepana duplex**, *Moore, P. Z. S.* 1865, p. 816, pl. 43, fig. 8; *C. & S.* no. 1237.

♀. Head and thorax purplish grey; abdomen and fore wing pale brown, suffused with purplish grey. Fore wing with two antemedial waved dark lines; a dark oblique line from the apex to centre of inner margin, the outer line deep black; a pale apical

patch with dark outline irrorated with brown, but without purplish suffusion; the marginal area similar, with a brown submarginal line. Hind wing pale brownish ochreous; a broad purplish antemedial band with dark outer edge; the outer area striated with brown. Cilia of both wings dark.

Hab. Sikhim. *Exp.* 68 millim.

732. **Drepana specularis,** *Moore, P. Z. S.* 1879, p. 407; *id. Lep. Ceyl.* ii, pl. 124, fig. 2; *C. & S.* no. 1243.

Head, thorax, and abdomen pale ochreous brown; the vertex of head and shaft of antennæ white. Fore wing pale ochreous brown; an indistinct antemedial irregular fuscous band; the outer area suffused with fuscous, leaving the veins pale; a pale oblique line from near the apex to inner margin beyond the middle; a submarginal series of black spots. Hind wing wholly suffused with fuscous, except the base and apex; the oblique line medial; two hyaline spots beyond the cell between veins 4 and 6; the submarginal spots indistinct.

Hab. Sikhim; Ceylon. *Exp.*, ♂ 34, ♀ 66 millim.

733. **Drepana flava,** *Moore, Lep. Atk.* p. 84, pl. 2, fig. 7; *C. & S.* no. 1238.

♀. Chrome-yellow; head and antennæ fulvous. Fore wing with an indistinct dark waved antemedial line; a speck at end of cell; two short waved lines beyond lower angle of cell; a waved postmedial line; two series of dark submarginal lunules, two of the outer series below the apex having white centres. Hind wing with a dark spot at end of cell; a waved postmedial line and two submarginal series of lunules.

Hab. Sikhim. *Exp.* 58 millim.

Sect. III. Fore wing with vein 11 given off from the middle of the areole, 10 from the end of it; mid tibia with no spurs; hind tibia with a terminal pair.

A. *Antennæ of female ciliate; of male bipectinate, the distal portion serrate.*

734. **Drepana albonotata,** *Moore, Lep. Atk.* p. 83 (1879); *C. & S.* no. 1235.
Callidrepana ochrea, *Butl. Ill. Het.* vi, p. 17, pl. 105, fig. 10 (1886).

♂. Head, thorax, and abdomen yellow. Wings chrome-yellow. Fore wing with the costa dark; traces of an antemedial waved dark line; a dark speck in the cell, and two silvery-white specks at end of it, the speck at lower angle on a fulvous ground; traces of waved postmedial and submarginal dark lines; a purplish marginal patch below the apex, the cilia beyond it rufous, all the

markings irrorated with silvery scales. Hind wing with traces of antemedial, postmedial, and submarginal waved dark lines.

The form *ochrea* differs in having an orange tinge, and the lines almost obsolete, as are the silvery-white specks at end of cell of both wings.

In the Nilgiri specimen the apex of fore wing is rather more produced.

Hab. Sikhim; Nilgiris. *Exp.* 34–38 millim.

735. **Drepana sadana,** *Moore, P. Z. S.* 1865, p. 817; *C. & S.* no. 1242.

♂. Head, thorax, and abdomen yellow; frons and antennæ brown. Fore wing luteous yellow; traces of an antemedial waved dark line; an orange spot in the cell and one at end of it; a large purplish or red-brown patch beyond the lower angle of cell, with two dark spots on it and some chestnut on its upper edge; a submarginal series of indistinct spots, two below the apex being prominent; a chestnut patch on outer margin below the apex. Hind wing with indistinct antemedial, postmedial, and submarginal waved dark lines.

The patch of fore wing is very variable in extent, being sometimes joined to the marginal patch and occupying the whole outer area except the costa, while sometimes both are almost absent.

Hab. Sikhim. *Exp.* 40 millim.

736. **Drepana xanthoptera,** n. sp.

♂. Head, thorax, and abdomen reddish yellow. Wings bright ochreous. Fore wing with a curved red-brown antemedial line; an oblique line from the costa before the apex to centre of inner margin; a submarginal series of dark specks, the two nearest the apex with white spots inside them; apex and outer margin suffused with red-brown. Hind wing with ante- and postmedial red-brown lines; a white speck at end of cell; a submarginal series of dark specks.

Hab. Náqa Hills, 1500 feet (*Doherty*); Khási Hills. *Exp.* 30–36 millim. Type in coll. Elwes.

737. **Drepana ferrea,** *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig 15.

♀. Chestnut-brown, with a purplish tinge. Fore wing with indistinct maculate ante- and postmedial fuscous bands; two white dark-outlined specks at end of cell; traces of a submarginal series of dark specks; a dark blotch on outer margin below the apex. Hind wing with the markings similar; one white speck at end of cell.

Hab. Ceylon. *Exp.* 42 millim.

738. **Drepana quadripunctata,** *Wlk. Journ. Linn. Soc.* vi, p. 175.

Head red-brown; thorax, abdomen, and wings reddish ochreous, the last with waved ante- and postmedial lines and two black

specks on the discocellulars; the postmedial line of fore wing angled beyond the cell, the angle ending in a dark speck on vein 6. Underside with the black specks and postmedial line prominent on both wings.

Hab. Nága Hills; Perak. *Exp.*, ♂ 26, ♀ 38 millim.

739. **Drepana vira,** *Moore, P. Z. S.* 1865, p. 817; *C. & S.* no. 1245.

Head, thorax, and fore wing violaceous grey; abdomen and hind wing yellow. Fore wing with an antemedial erect red-brown line arising from a dark spot on the costa; a similar postmedial spot; a white speck at upper angle of cell and two at lower angle; an oblique submarginal nearly straight red-brown line; cilia chestnut. Underside yellow.

Hab. Sikhim. *Exp.* 30 millim.

B. *Antennæ bipectinate to apex in male.*

740. **Drepana fulva,** n. sp.

♂. Bright fulvous yellow; head and collar bright ferruginous. Fore wing with traces of two dark specks beyond the cell in the interspaces between veins 2 and 4; the cilia fuscous, greyish at tips. Hind wing uniform fulvous yellow.

♀. Much browner.

Hab. Sikhim (*Elwes*). *Exp.* 44 millim. Type in coll. Elwes.

741. **Drepana hyalinata,** *Moore, P. Z. S.* 1867, p. 638; *C. & S.* no. 3506.

Fore wing with the apex rounded, the outer margin slightly angled.

♀. Antennæ bipectinate, the branches long. Head, thorax, and abdomen grey; vertex of thorax and abdomen suffused with rust-red. Fore wing hyaline; the basal area sparsely clad with rust-red scales, and terminating in an angle at lower extremity of cell; traces of an irregular hyaline antemedial line; an irregular submarginal rust-red band outlined in black, curved and narrow below the costa and angled at vein 3. Hind wing hyaline, with some rust-red scales on inner margin, and a rust-red lunulate submarginal band outlined in black.

Hab. Sikhim. *Exp.* 32 millim.

Genus **SPICA.**

Spica, *Swinh. P. Z. S.* 1889, p. 424.

Type, *S. luteola*, Swinh.

Range. Sikhim.

Palpi of moderate length, the first two joints thickly scaled; proboscis present. Antennæ of male with the branches short and

close together; mid tibiæ with one pair of spurs, hind tibiæ with two pairs. Fore wing with vein 6 from just above angle of cell; 7 and 10 from the areole, 8 and 9 from end of it; frenulum present.

742. **Spica luteola**, *Swinh. P. Z. S.* 1889, p. 424, pl. 44, fig. 10.

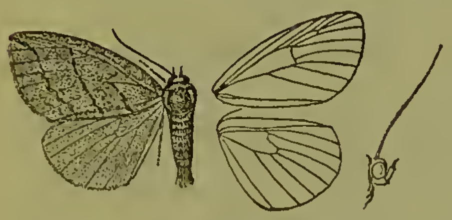

Fig. 233.—*Spica luteola*, ♂. 1/1.

Head, thorax, and abdomen orange-yellow. Fore wing yellow, irrorated with orange scales; an angled ferruginous antemedial line; an oblique postmedial line; reniform outlined with ferruginous; a curved submarginal line; an oblique apical streak. Hind wing pale ochreous.

Hab. Sikhim. *Exp.* 34 millim.

Genus THYMISTADA.

Thymistada, *Wlk. Cat.* xxxii, p. 515 (1865).

Type, *T. tripunctata*, Wlk.
Range. Sikhim.

Palpi slender, upturned and reaching vertex of head; proboscis present. Antennæ with the branches long in male. Mid tibia with one pair of long spurs; hind tibia with two pairs. Frenulum present. Fore wing with the apex falcate and pointed; outer margin angled at vein 3; veins 6, 7, and 10 from the areole, which is large and formed by the anastomosis of 8 and 9. Hind wing with the inner margin deeply excised at anal angle.

743. **Thymistada tripunctata**, *Wlk. Cat.* xxxii, p. 515; *C. & S.* no. 1234.
Erosia cervinaria, *Moore, P. Z. S.* 1867, p. 646; *C. & S.* no. 3052.

Head red-brown; thorax, abdomen, and fore wing dark purplish brown; the last with waved dark antemedial, postmedial, and submarginal lines, in some specimens, with a few grey scales on their outer edges; three dark specks on the discocellulars; costa and outer margin red-brown; cilia black, with pale tips. Hind wing pale fuscous; a dark patch at anal angle, with a bent line of white scales on it; cilia pale at apical area, black with pale tips towards anal angle.

Fig. 234.
Thymistada tripunctata, ♂. 1/1.

♀. Paler.

There is a large paler form also from Sikhim.

Hab. Sikhim. *Exp.* 36–40 millim.

Genus DEROCA.

Deroca, *Wlk. Cat.* iv, p. 822 (1855).

Type, *D. hyalina*, Wlk.

Range. Japan; N.W. Himalayas; Sikhim; Nágas; Manipur; Pegu.

Palpi short and slight; proboscis present. Antennæ with the branches long in male, short in female. Mid tibia with one pair of minute spurs, hind tibia with two pairs. Frenulum absent. Fore wing with apex rounded; vein 6 from the areole, 7 and 10 from the end of it. Hind wing with vein 8 anastomosing strongly with 7.

744. Deroca hyalina, *Wlk. Cat.* iv, p. 823; *C. & S.* no. 899.

Head, thorax, and abdomen blackish, sparsely covered with white hair. Wings hyaline; fore wing with traces of two antemedial waved lines, and both wings with two postmedial and one submarginal waved line; a series of marginal spots and a marginal more or less prominent dark line.

There is a small less completely hyaline form from Sikhim that may be distinct.

Hab. N.W. Himalayas; Sikhim; Nágas; Manipur; E. Pegu. *Exp.* 34–44 millim.

745. Deroca inconclusa, *Wlk. Cat.* vii, p. 1727.

Deroca maculata, *Moore, P. Z. S.* 1872, p. 575; *C. & S.* no. 900.

Differs from *hyalina* in the wings being clothed sparsely with white hair. Fore wing with two black spots below the costa on basal area; two below them in and below the cell; a series of three antemedial spots, on costa, at origin of vein 2, and on inner margin; a postmedial series of four spots, two being on the discocellulars; a submarginal series of dentate spots interrupted at middle, with a white line running through them; three pairs of marginal spots. Hind wing with two indistinct postmedial maculate bands; a black spot at apex, a pair at middle of outer margin, and a pair at anal angle.

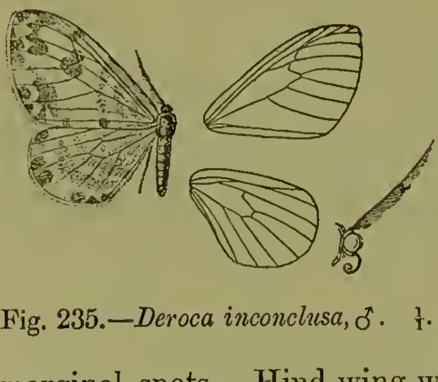

Fig. 235.—*Deroca inconclusa*, ♂. ½.

Hab. Japan; N.W. Himalayas; Nágas; Manipur. *Exp.*, ♂ 33, ♀ 36–43 millim.

Genus PHALACRA.

Phalacra, *Wlk. Cat.* xxxv, p. 1638 (1866).

Type, *P. vidhisara*, Wlk.
Range. India and Ceylon.

Palpi short and slight; proboscis present. Antennæ serrate in male, thickened and flattened in female. Mid tibia with one pair of long spurs, hind tibia with two pairs. Frenulum absent. Fore wing produced, the apex acute; vein 6 from below the angle of cell; 7 from the areole which is formed by 9 and 10 anastomosing with 8. Hind wing with the outer margin straight from anal angle to vein 6, where it is angled.

Sect. I. Wings with the outer margins not excised below the apices.

746. **Phalacra vidhisara**, *Wlk. Cat.* xxi, p. 319; *Moore, Lep. Ceyl.* iii, pl. 201, figs. 1, 1 *a* (larva); *C. & S.* no. 4011.
Phalacra metagonaria, *Wlk. Cat.* xxxv, p. 1639.

Pale reddish brown, sparsely irrorated with black scales. Fore wing with traces of an antemedial waved black line; postmedial and submarginal series of black specks. Hind wing with an in-

Fig. 236.—*Phalacra vidhisara*, ♀. $\frac{1}{1}$.

distinct subbasal line; a double medial line; postmedial and submarginal series of black specks. Cilia of both wings traversed by a black line.

Larva fusiform, the head broad; lateral and dorsal setæ and prolonged anal setaceous spines; colour green, with a dorsal pink band laterally bordered by yellow, and two red lines.

Pupa purple-brown, covered with white bloom.

Hab. Bombay; Calcutta; Nilgiris; Ceylon. *Exp.*, ♂ 28, ♀ 38 millim.

Sect. II. Both wings with the outer margins excised below the apices.

747. **Phalacra excisa**, n. sp.

♀. Grey-brown. Fore wing with the outer margin excised below the apex and angled at vein 4; traces of numerous waved

lines; a black spot in the cell; a pale postmedial band with waved edges; a dark speck on the costa before the apex. Hind wing paler, with the lines nearly straight, two antemedial, four postmedial, and one submarginal line being prominent, the outer margin excised between the apex and the much-produced angle at vein 6.

Hab. Sikhim. *Exp.* 36 millim. Type in coll. Knyvett.

Genus DRAPETODES.

Drapetodes, *Guen. Sp. Gén. Lép. Phal.* i, p. 424 (1857).

Type, *D. mitaria*, Guen.

Range. Sikhim; Sylhet; Nágas; Ceylon; Singapore.

Palpi slender and upturned, reaching vertex of head, the third joint short; proboscis present. Antennæ thickened and flattened in both sexes. Legs naked; mid tibia with one pair, hind tibia with two pairs of long spurs. Frenulum absent. Fore wing with the apex rounded; vein 6 from below the angle of cell; 7 from the angle; 8, 9, 10 stalked.

748. **Drapetodes mitaria**, *Guen. Sp. Gén. Lép. Phal.* i, p. 424; *C. & S.* no. 3590.

Drapetodes fratercula, *Moore, Lep. Ceyl.* iii, p. 541, pl. 200, figs. 1, 1 *a* (larva); *C. & S.* no. 3589.

Anisodes? platycerata, *Wlk. Cat.* xxvi, p. 1586.

Fulvous yellow. Fore wing with a plumbeous line below the costa of fore wing from the base to the apex, then passing inside the outer margin to outer angle; two indistinct dentate antemedial lines; two dark specks at end of cell; the area just beyond the cell suffused with purplish grey; three obliquely-waved and curved lines from the costa near apex to centre of inner margin, where they almost meet; the area near outer angle suffused with purplish grey. Hind wing with two subbasal lines; a broad medial purplish-grey band with dark edges, three waved lines beyond it, and a leaden submarginal line.

Fig. 237. *Drapetodes mitaria*, ♂. 1/1.

The form *fratercula*, from Sikhim, the Nágas, and Ceylon, has the basal area of both wings, the apex of fore wing, and outer area of hind wing very pale yellow, and all the markings well defined; the meso- and metathorax and abdomen pale, the last with dark bands.

Larva pale salmon-pink; head pale yellow, with two brown transverse bands; anal somite tapering to a bifid point, each somite with six small setaceous glandular spines. Dorsal surface of 1st, 2nd, and 3rd somites dull green, of 4th, 5th, 10th, and 11th dark brown; lateral area of 6th to 9th yellow; a lateral series of six

dark brown diagonal stripes. Spins a cocoon in a rolled-up leaf; pupa covered with white bloom.

Hab. Sikhim; Sylhet; Nágas; Ceylon; Singapore. *Exp.*, ♂ 28, ♀ 32 millim.

Genus CILIX.

Cilix, *Leach, Edinb. Encycl.* ix, p. 134 (1815).
Euclea, *Hübn. Verz.* p. 149 (1818).

Type, *C. glaucata*, Scop.

Range. N. America; Europe; Himalayas.

Proboscis absent; antennæ of male bipectinated, the branches short, of female serrate. Fore wing with veins 6 and 7 from angle of cell; 8, 9, 10 stalked. Hind wing with vein 8 anastomosing with 7 beyond the cell.

In American and European specimens the palpi are minute and porrect; the hind tibiæ have two pairs of spurs; fore wing with vein 7 separate from 8, 9, 10. In Himalayan specimens the palpi are absent; the hind tibiæ have but one pair of spurs, and vein 7 of the fore wing is bent upwards and almost, or quite, anastomoses with 8, 9, 10.

749. **Cilix glaucata**, *Scop. Ent. Carn.* p. 221.
Bombyx ruffa, *Linn. Syst. Nat.* i, 2, p. 1068.
Bombyx compressa, *Fabr. Gen. Ins.* p. 279.
Geometra modesta, *Naturf.* xiii, 27, pl. 3, fig. 4.

Fig. 238.
Cilix glaucata, ♀. 1/1.

Head and thorax fuscous; collar and tegulæ pure white; abdomen white, slightly ringed with fuscous. Fore wing pure shining white; a large leaden patch on centre of inner margin irrorated with white, with some olive on its upper edge and above it; a more or less obsolete fuscous band from beyond the upper angle of cell to the leaden patch; raised ridges of white scales on end of median nervure and origins of veins 2, 3, 4; a submarginal fuscous line from vein 6 to inner margin, with a series of marginal leaden lunules beyond it; cilia fuscous. Hind wing white, with a marginal fuscous lunular band.

Hab. N. America; Europe; Simla; Dalhousie. *Exp.*, ♂ 24, ♀ 26 millim.

Genus ORETA.

Oreta, *Wlk. Cat.* v, p. 1166 (1855).
Cobanilla, *Moore, Lep. Ceyl.* ii, p. 120 (1883).

Type, *O. extensa*, Wlk.

Range. N. America; Japan; throughout India, Ceylon, and Burma; Java.

Proboscis absent. Antennæ serrate in both sexes or bipectinate in male. Legs fringed with hair. Frenulum absent. Fore wing produced and falcate, the apex rounded; vein 6 from angle of cell; 7 and 8 stalked; 9, 10, 11 stalked, 9 anastomosing shortly with 7 and 8.

SECT. I. (*Oreta*). Palpi minute; mid and hind tibiæ without spurs.

A. *Antennæ with the serrations not coalescing.*

750. **Oreta extensa**, *Wlk. Cat.* v, p. 1166; *Moore, Lep. Ceyl.* ii, pl. 124, figs. 3, 3 *a*; *C. & S.* no. 1246.
Oreta suffusa, *Wlk. Cat.* v, p. 1167.

Head and legs bright orange or scarlet; thorax and abdomen yellow, with a pink tinge. Both wings yellow, suffused with pinkish brown, sometimes uniformly, but generally the basal area of

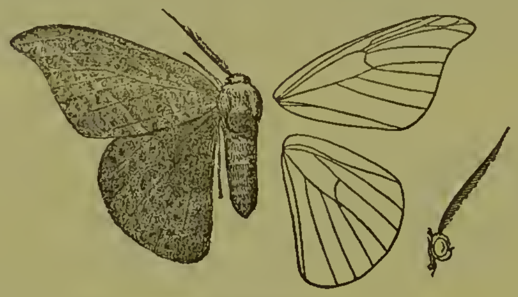

Fig. 239.—*Oreta extensa*, ♂. 1/1.

fore wing and the whole outer area of hind wing, except the apex, is not suffused; both wings with numerous small, dark, evenly distributed and more or less prominent spots, and two white specks on the discocellulars. Fore wing with a yellow oblique line from the apex to inner margin beyond the middle, and a fuscous spot at outer angle.

The form *suffusa* is much duller in colour and suffused with brown.

Larva spins a cocoon in a rolled-up leaf.

Hab. The whole of India, Ceylon, and Burma; Java. *Exp.*, ♂ 38–43, ♀ 40–54 millim.

751. **Oreta sanguinea**, *Moore, Lep. Atk.* p. 85; *C. & S.* no. 1249.

♀. Differs from *extensa* in having the thorax and abdomen slightly suffused with pale crimson. Fore wing with the basal two-thirds pale crimson, followed by a broad yellow band with irregular edges; the marginal area greyish fuscous at apex and outer angle, pale crimson at middle. Hind wing with the basal half and apex pale crimson; the outer half yellow.

Hab. Sikhim. *Exp.* 50 millim.

752. **Oreta violacea,** *Hmpsn. Ill. Het.* viii, p. 62, pl. 141, fig. 18.

♀. Differs from *extensa* in being yellow, with a purplish, not pinkish, brown tinge; the collar white; head and legs less brilliant orange; fore wing with the whole basal area yellowish; the oblique yellow line from the apex curved; the apex greyish. Hind wing suffused with purplish, the base, a medial line, and a patch on outer margin yellowish.

Hab. Nilgiris, S. slopes, 3000 feet. *Exp.* 28 millim.

753. **Oreta obtusa,** *Wlk. Cat.* v, p. 1167; *C. & S.* no. 1247.
Oreta vatama, *Moore, P. Z. S.* 1865, p. 816; *C. & S.* no. 1250.

♂. Differs from *extensa* in the frons and legs being more brilliant scarlet; the thorax and abdomen yellowish. Wings with the ground-colour yellowish, evenly striated with brown. Fore wing with a bright chestnut curved line from apex to centre of inner margin, the area within it suffused with pinkish-brown, except a patch on base of inner margin bounded by an indistinct dark line; a pinkish-brown patch on centre of outer margin; the apex dark, with some white scales on the origin of the oblique line. Hind wing with a broad medial pinkish-brown band with dark edges. Both wings with some white on the discocellulars; cilia of fore wing and at apex of hind wing red.

♀. More suffused with brown; the line from apex of fore wing less curved.

Hab. Kashmir; Sikhim; Sylhet. *Exp.*, ♂ 40, ♀ 48 millim.

B. *Male with the antennæ thickened and flattened by the coalescing of the serrations.*

754. **Oreta obliquilinea,** n. sp.

Differs from *obtusa* in being ochreous yellow; the head and legs not so brilliantly scarlet. Wings with evenly-disposed brown striæ; a straight oblique brown line with greyish outer edge from apex of fore wing to inner margin of hind wing before the middle. Underside of fore wing and costal area of hind wing more or less suffused with red.

The male from the Punjab has almost the whole fore wing and the apex of hind wing suffused with brown.

Hab. Kálapáni, Punjab; Sikhim; Sylhet. *Exp.*, ♂ 38, ♀ 42 millim. Type in B. M.

755. **Oreta albipuncta,** *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 8.

♂. Head, thorax, and abdomen pale red-brown. Wings pale red-brown, with evenly disposed dark striæ. Fore wing with an indistinct antemedial line; a white spot at end of cell; a postmedial dark and pale red line angled below the costa; some fuscous suffusion at apex. Hind wing with a medial dark and pale red line.

Hab. Trincomali, Ceylon. *Exp.* 26 millim.

756. **Oreta castanea**, *Hmpsn. Ill. Het.* viii, p. 62, pl. 141, fig. 17.

♂. Pale reddish brown. Wings evenly striated with brown; an oblique line from the apex of fore wing to middle of inner margin of hind wing, bent near the apex, where there is a deep black spot above it. Fore wing with traces of an antemedial dark line; the costa red-brown; a white speck on discocellulars.

Hab. Nilgiris, N. slopes, 3500 feet. *Exp.* 28 millim.

757. **Oreta rotundapex**, *Hmpsn. Ill. Het.* viii, p. 61, pl. 141, fig. 6.

♂. Dark purplish olive-brown. Wings thickly striated with brown. Fore wing crossed by a broad, medial, indistinct darker band with a vinous tinge. Hind wing with a medial, pale, straight line, the area inside it and the marginal area with a vinous tinge.

Hab. Nilgiris, N. slopes, 3500 feet. *Exp.* 36 millim.

758. **Oreta pavaca**, *Moore, P. Z. S.* 1865, p. 815; *C. & S.* no. 1248.

♂. Head with the frons crimson, the vertex red-brown; thorax and abdomen red-brown, the latter reddish towards extremity. Fore wing red-brown, the basal, costal, and more especially the outer areas suffused with silvery scales; discocellulars silver. Hind wing red-brown, the inner area slightly suffused with silver scales; the discocellulars silver. Underside brilliant crimson; both wings with numerous dark specks; the inner area of hind wing yellowish.

Hab. Sikhim. *Exp.* 44 millim.

SECT. II. Mid and hind tibiæ with terminal pairs of spurs. Antennæ bipectinate in male, the branches long.

A. *Palpi short and porrect.*

759. **Oreta griseotincta**, n. sp.

♂. Palpi and legs scarlet; head, thorax, abdomen, and wings chestnut-brown. Fore wing slightly irrorated with silvery grey; medial and postmedial dark lines angled below the costa and approaching each other towards inner margin; a blackish patch on costa before apex; three black submarginal specks towards inner margin. Hind wing chestnut-brown, very slightly irrorated with silvery grey; ante- and postmedial indistinct curved lines. Cilia of both wings red-brown. Underside with the costal area of both wings suffused with scarlet.

Hab. Sikhim (*Möller*). *Exp.* 32 millim. Type in coll. Elwes.

B. (Cobanilla). *Palpi upturned, reaching vertex of head.*

760. **Oreta marginata,** *Moore, Lep. Ceyl.* ii, p. 121, pl. 124, fig. 4; *C. & S.* no. 1264.

♂. Frons red; head, thorax, and abdomen ochreous. Fore wing yellow, the costa red; the area below the medial two-thirds of costa suffused with red-brown; an indistinct dark spot on discocellulars; outer margin from below apex to near outer angle red-brown. Hind wing yellow, the cilia red-brown. Underside suffused with crimson.

Hab. Ceylon; E. Pegu. *Exp.* 32 millim.

Genus **CAMPTOCHILUS**, nov.

Type, *C. reticulatum*, Moore.

Range. Sikhim.

Palpi short and porrect; proboscis present. Antennæ cilated in female. Mid tibia with one pair of spurs, hind tibia with two pairs. Frenulum present. Fore wing with the costa bent beyond the middle, the apex being produced upwards. Vein 6 from below the angle of cell; 7 and 8 stalked. Hind wing with a slight vesicle between veins 1 *a* and *b*; the discocellulars straight; vein 8 almost straight.

761. **Camptochilus reticulatum,** *Moore, Lep. Atk.* p. 233, pl. 8, fig. 3; *C. & S.* no. 3243.

Head, thorax, and abdomen brick-red. Fore wing brick-red, with evenly-disposed darker striæ over the whole wing, except a

Fig. 240.—*Camptochilus reticulatum*, ♀. ½.

broad oblique yellow band from the apex to below vein 2. Hind wing similar, the yellow band marginal from apex to anal angle, and with the reticulations continued on it; a medial straight line.

Hab. Sikhim. *Exp.* 38–40 millim.

Species formerly recorded as Indian which are omitted.

Argyris deliaria, Wlk., C. & S. no. 1259, is a Geometer (*Acidalinæ*.

Argyris delphiaria, Guen., C. & S. no. 1260, is a Geometer.
Argyris extrusata, Wlk., C. & S. no. 1261, ,, ,,
Argyris ocellata, H.-S., C. & S. no. 1263, ,, ,,
Problepsis vulgaris, Butl. Ill. Het. vii, p. 43, ,, ,,
Argyris cinerea, Butl., C. & S. no. 1258 A, ,, ,,
Argyris apollinaria, Guen., is a Geometer.
Ciliæ olivacea, Hmpsn. Ill. Het. viii, p. 63, is a Noctua (*Acontiinæ*).
Drapetodes bilineata, Wlk., C. & S. no. 3588. Type lost; description unrecognizable.

Family THYRIDIDÆ.

Moths generally with hyaline patches and striæ on the wings. Palpi obliquely upturned and slender. Antennæ almost simple. Fore wing with vein 1 *a* forming a fork with 1 *b* at base; 1 *c* absent; 5 from near lower angle of cell. Hind wing with two internal veins; vein 8 nearly touching vein 7 just before or after the end of the cell. Mid tibia with one pair of spurs; hind tibia with two pairs.

Larva Pyraliform, with five pairs of prolegs.*

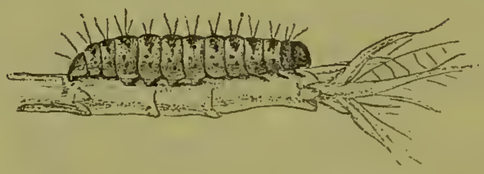

Fig. 241.—Larva of *Striglina scitaria*. 1/1.
(From Moore, Lep. Ceyl. iii. pl. 175, fig. 1 *a*.)

Key to the Genera.

a. Hind wing with the cell closed.
  a'. Hind wing with vein 5 from the centre of the discocellulars .... 1. ADDÆA, p. 353.
  b'. Hind wing with vein 5 from near lower angle of cell.
    a². Fore wing with veins 7, 8 and 9, 10 stalked .... 3. DIXOA, p. 355.
    b². Fore wing with veins 7 and 8 stalked, 9 and 10 from cell .... 5. HYPOLAMPRUS, [p. 364.
    c². Fore wing with veins 8 and 9 stalked . 6. CAMADENA, p. 366.
    d². Fore wing with all the veins from cell.
      a³. Fore wing with veins 7 and 8 from angle of cell; 9 and 10 from some way before the angle .... 2. STRIGLINA, p. 353.

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* After the *Thyrididæ* would follow the *Pyralidæ*, if the Heterocera could be arranged in a linear series.

b^3. Fore wing with veins 7, 8, 9, 10 given off near angle of cell.
a^4. Fore wing with the costa excised . 7. Herdonia, p. 367.
b^4. Fore wing with the costa evenly arched.
a^5. Hind wing with the outer margin nearly evenly curved .... 4. Rhodoneura, [p. 355.
b^5. Hind wing with the outer margin much excurved at centre . . 8. Dysodia, p. 368.
b. Hind wing with the cell open.
a′. Fore wing with veins 7 and 8 from the cell................................ 10. Hyperthyris, [p. 370.
b′. Fore wing with veins 7 and 8 stalked . . 9. Glanycus, p. 369.

Genus ADDÆA.

Addæa, *Wlk. Cat.* xxxiv, p. 1201 (1865).
Mesopempta, *Meyr. Trans. Ent. Soc.* 1886, p. 217.

Type, *A. subtesselata*, Wlk., from Australia.

Range. Ceylon ; Ceram ; New Guinea ; Australia ; Solomons.

Palpi upturned, short, and thickly scaled. Antennæ annulated and minutely ciliated. Hind tibia rather thickened. Fore wing with veins 8 and 9 stalked; 10 from just before the angle of cell. Hind wing with vein 5 from the centre of discocellulars.

762. **Addæa trimeronalis**, *Wlk. Cat.* xix, p. 916 ; *C. & S.* no. 4386.
Mesopempta heliopsamma, *Meyr. Trans. Ent. Soc.* 1886, p. 217.

Fig. 242.
Addæa trimeronalis, ♂. ½.

Pale red-brown. Wings evenly and closely striated with slightly darker lines. Underside with a rather darker spot on the discocellulars of fore wing.

Hab. Ceylon ; New Guinea. *Exp.* 15 millim.

Genus STRIGLINA.

Striglina, *Guen. Ann. Soc. Ent. Fr.* 1877, p. 283
Sonagara, *Moore, Lep. Atk.* p. 179 (1882).

Type, *S. scitaria*, Wlk.

Range. Japan; Formosa; throughout India, Ceylon, and Burma; Andamans ; Borneo ; Australia ; Solomons ; Fiji.

Palpi upturned and thickly scaled, the third joint short. Antennæ minutely ciliate in male, simple in female. Femora and tibiæ hairy. Fore wing with veins 8 and 9 from cell, 9 and 10 from some way before the angle. Hind wing with vein 5 from just above lower angle of cell.

763. **Striglina scitaria**, *Wlk. Cat.* xxvi, p. 1488; *Moore, Lep. Ceyl.* iii, pl. 175, figs. 1, 1 *a* (larva).
Striglina lineola, *Guen. Ann. Soc. Ent. Fr.* 1877, p. 284; *C. & S.* no. 2786.
Thermesia reticulata, *Wlk. Cat.* xxxiii, p. 1062; *C. & S.* no. 2811.
Sonagara strigosa, *Moore, Lep. Atk.* p. 180; *C. & S.* no. 2813.
Anisodes pyriniata, *Wlk. Cat.* xxvi, p. 1582.
Homodes thermesioides, *Snell. Tijd. v. Ent.* xx, 1877, p. 28.
Azazia navigatorum, *Feld. Reis. Nov.* pl. 117, fig. 4.
Laginia reticulata, *Wlk. Cat.* xxxv, p. 1560.
Sonagara superior, *Butl. A. M. N. H.* (5) xx, 1887, p. 433.
Sonagara vialis, *Moore, P. Z. S.* 1883, p. 27, pl. 6, fig. 9; *C. & S.* no. 2814.
Sonagara strigipennis, *Moore, Lep. Atk.* ii, p. 180; *C. & S.* no. 2812.

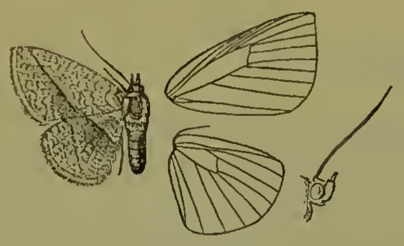
Fig. 243.
Striglina scitaria, ♂. 1/1.

Reddish ochreous, the wings evenly striated with brown; an oblique red-brown line from the apex of fore wing to inner margin of hind wing before the middle. Underside with a dark spot at end of cell of fore wing; the oblique line coming out as black streaks.

Some specimens have a line on the hind wing from the same point on costa as the oblique line, and either curved to inner margin above anal angle or oblique to outer margin before anal angle.

The Sikhim forms *vialis* and *strigipennis* are large; the former is bright coloured, with a dark ring-spot at end of cell of fore wing and has the oblique line to hind wing; the latter with the line curved.

Larva olivaceous, the first somite ochreous, head blackish; a few fine short dorsal hairs; some transverse series of black dots on second to terminal somites.

Hab. Japan; Formosa; throughout India, Ceylon, and Burma; Andamans; Borneo; New Guinea; Solomons; Australia; Fiji. *Exp.* 24–43 millim.

764. **Striglina decussata**, *Moore, P. Z. S.* 1883, p. 27, pl. 6, fig. 8; *C. & S.* no. 2810.
Striglina bivittata, *Moore, P. Z. S.* 1883, p. 27, pl. 6, fig. 7.

♂. Differs from *scitaria* in being browner. Wings with small dark spots instead of striæ; no oblique line; fore wing with a dark spot at end of cell and one below it.

The form *decussata*, from N.E. India and Burma, is large and brighter fulvous, whilst *bivittata*, from the Andamans and Borneo, is a small brown form with medial and marginal bands to both wings developed; the spots at end of cell of fore wing may be absent in any of the forms, but small fulvous and large brown forms also occur in Sikhim.

Hab. Sikhim; Assam; Nágas; E. Pegu; Borneo. *Exp.* 26 millim.

Genus DIXOA, nov.

Type, *D. albatalis*, Swinh.
Range. Canara; Poona; Raipur.
Palpi upturned, reaching vertex of head, the third joint short. Antennæ minutely ciliated. Fore wing with veins 7, 8, and 9, 10 stalked. Hind wing with vein 5 from just above lower angle of cell.

765. **Dixoa albatalis**, *Swinh. P. Z. S.* 1889, p. 422, pl. 44, figs. 1, 2.

Fig. 244.—*Dixoa albatalis*, ♂. $\frac{1}{1}$.

Head, thorax, and abdomen covered with white scales. Wings pure white, with evenly disposed small fuscous striæ over the whole surface, these being more prominent on the underside.
Hab. Canara; Poona; Raipur. *Exp.* ♂ 30, ♀ 40 millim.

Genus RHODONEURA.

Rhodoneura, *Guen. Sp. Gén. Lép., Phal.* ii, pl. i, fig. 8 (1857).
Pharambara, *Wlk. Cat.* xxxiv, p. 1274 (1865).
Osca, *Wlk. Journ. Linn. Soc.* vii, p. 73 (1864).
Microsca, *Butl. Ill. Het.* iii, p. 71 (1879).
Banisia, *Wlk. Journ. Linn. Soc.* vii, p. 77 (1864).
Letchena, *Moore, Lep. Ceyl.* iii, p. 257 (1887).
Durdara, *Moore, Lep. Atk.* p. 176 (1882).

Type, *R. pudicula*, Guen., from Java and Celebes.
Range. W. Indies; S. America; S. Africa; Madagascar; Aden; China; throughout India and Ceylon; Burma; Andamans; Borneo; Java; Celebes; Australia; New Britain; Tonga.
Palpi slight, upturned, reaching above vertex of head, the 3rd joint variable in length. Fore wing slightly produced and acute at apex. Fore wing with veins 6, 7, 8, 9, 10 given off close to the angle of cell. Hind wing with vein 5 from just above lower angle of cell.

Sect. I. Palpi with the third joint very long; antennæ almost simple.

766. **Rhodoneura obliqualis**, *Warr. MS.*

♂. Head, thorax, and abdomen silvery white; head and thorax suffused with brown; abdomen with brown bands. Wings silvery white; basal area covered with brown striæ; an oblique line from the apex of fore wing, which becomes double towards inner margin and treble on the hind wing; another submarginal line becoming double on the hind wing; a marginal waved line. Underside with the costa of fore wing chestnut.
Hab. Sikhim. *Exp.* 42 millim. Type in coll. Elwes.

SECT. II. Palpi with the third joint of moderate length; antennæ nearly simple in both sexes.

A. *Outer margin of both wings nearly evenly curved.*

767. **Rhodoneura acaciusalis**, *Wlk. Cat.* xix, p. 901; *C. & S.* no. 4439.
Siculodes strigatula, *Feld, Reis. Nov., Lep.* pl. 134, fig. 9.

Head and collar brown; thorax and abdomen pale, suffused with reddish brown. Fore wing ochreous white, with numerous brown specks and spots below the centre of costa, in the end of cell, and

Fig. 245.—*Rhodoneura acaciusalis*, ♂. 1/1.

over the whole of the inner area except the base; the nervules beyond the cell salmon-colour. Hind wing ochreous white; the whole medial area streaked and spotted with dark brown; the nervules beyond the cell salmon-pink. Underside striated with chestnut, the nervules bright crimson; veins 6, 7, 8 of fore wing streaked with black.

The form *strigatula*, from China, has the brown markings of the body and wings obsolete; the striæ brown and more prominent; underside with the chestnut suffusion of the hind wing obsolete. In a Sikhim variety the hind wing has the striæ very numerous and bright pink on both upper and under sides. In another form the striæ of both wings are pink. In a small male from Burma the striæ are obsolescent and few in number.

Hab. China; Sikhim; Moulmein. *Exp.* 22–32 millim.

768. **Rhodoneura multipunctata**, *Warr. MS.*

Differs from *obliqualis* in the head, thorax, and abdomen being without brown suffusion or bands. Wings with less silvery sheen, evenly striated with fuscous, and without lines; fore wing with two submarginal series of black dots; hind wing with one series. Underside with a costal series of black dots to hind wing.

Hab. Sikhim; Assam; Burma. *Exp.* 34–40 millim. Type in coll. Elwes.

769. **Rhodoneura reticulalis**, *Moore, P. Z. S.* 1877, p. 616; *C. & S.* no. 4376.

♀. Head and thorax brown; abdomen white, suffused with brown. Wings white, reticulated with brown almost evenly over the whole surface; costa of fore wing slightly suffused with brown. Underside with the reticulations rather more prominent.

Hab. Andamans. *Exp.* 29 millim.

770. **Rhodoneura anticalis**, *Wlk. Cat.* xxxiv, p. 1238.
Rhodoneura tetraonalis, *Moore, P. Z. S.* 1877, p. 616, pl. 60, fig. 10.

Differs from *reticulalis* in the wings being striated with fuscous; apex of fore wing with two small black dots. Underside with a conspicuous black spot centred with white at the apex of fore wing; a short fuscous postmedial band above inner margin.

Hab. Rangoon; Andamans; Mysol. *Exp.* 24 millim.

771. **Rhodoneura nævina**, *Moore, Lep. Atk.* p. 212; *C. & S.* no. 4375.

♂. Differs from *anticalis* in being whiter, with fewer striæ on the wings and with some prominent waved black marks on the inner portion of two of the postmedial series of striæ of the fore wing. Underside with the area above the cell of fore wing suffused with golden scales; postmedial and submarginal double series of waved chestnut marks on inner half of wing.

Hab. Sikhim. *Exp.* 30 millim.

772. **Rhodoneura hypargyra**, n. sp.

♂. Head and collar brown; thorax white, more or less tinged with brown; abdomen white, with a dark band on penultimate segment. Fore wing silvery white, with a few dark strigæ; costa fuscous, with short white streaks on it; a black speck at lower angle of cell; a short medial band from vein 2 to inner margin and postmedial spot on vein 2; three subapical black specks. Hind wing silvery white, with a few brown strigæ and short black sub-basal, medial, and postmedial lines; three submarginal black specks towards apex and two towards anal angle. Underside of fore wing with the costal area brown, much spangled with silvery scales, especially at upper angle of cell.

Hab. Tenasserim Valley; Mergui (*Doherty*). *Exp.* 22 millim. Type in coll. Druce.

773. **Rhodoneura bastialis**, *Wlk. Cat.* xix, p. 902; *C. & S.* no. 4442.
Rhodoneura marmorealis, *Moore, P. Z. S.* 1877, p. 617; *C. & S.* no. 4374.
Rhodoneura denticulosa, *Moore, Lep. Ceyl.* iii. p. 267; *C. & S.* no. 4373.

Differs from *anticalis* in having two black dots on underside of fore wing at apex, with an oblique line across the apex from costa to outer margin.

The male has the striæ of the upperside aggregated in the form of bands, whilst in the female they are separated.

Hab. Assam; Nágas; Burma; Ceylon; Andamans; Solomons. *Exp.* 20–22 millim.

774. **Rhodoneura myrsusalis**, *Wlk. Cat.* xix, p. 892.
Letchena elaralis, *Wlk. Cat.* xix, p. 901; *C. & S.* no. 4498.
Pyralis? idalialis, *Wlk. Cat.* xix, p. 903; *C. & S.* no. 4449.

Durdara pyraliata, *Moore, Lep. Atk.* p. 177; *C. & S.* no. 2789.
Durdara lobata, *Moore, Lep. Atk.* p. 177; *C. & S.* no. 2787.
Durdara zonula, *Swinh. P. Z. S.* 1885, p. 469, pl. 28, fig. 12; *C. & S.* no. 2790.

Grey-brown, some specimens with a slight red or pink tinge. Wings somewhat lineally striated with dark brown. Fore wing with the costa yellow; cilia fuscous on fore wing, white on hind wing. Underside silvery grey, the striæ prominent and chestnut-brown; fore wing with two brownish postmedial and one subapical patch.

The variety *idalialis* has one to three small hyaline spots below the lower angle of cell of fore wing, with an ochreous streak below them, beneath which is another hyaline spot.

Hab. Brazil; Natal; throughout India, Ceylon, and Burma; Borneo. *Exp.* 22–26 millim.

775. **Rhodoneura myrtæa,** *Drury, Exot. Ins.* ii, pl. 2, fig. 3; *C. & S.* no. 2788.
Durdara fenestrata, *Moore, P. Z. S.* 1883, p. 27, pl. vi, fig. 6; *C. & S.* no. 2785.
Durdara ovifera, *Butl. P. Z. S.* 1892, p. 129, pl. vi, fig. 7.
Thermesia fenestrina, *Feld. Reis. Nov.* pl. 117, fig. 2.
Microsca plagifera, *Butl. Trans. Ent. Soc.* 1886, p. 420.

Differs from *myrsusalis* in being brick-red; the striæ less distinct. Fore wing without the yellow costa. Underside suffused with pink, the striæ well defined; a dark brown subapical patch on margin of fore wing.

The form *fenestrata* has two hyaline spots on the fore wing, with an ochreous streak between them; *ovifera* from Borneo has the 3rd joint of palpi and the hyaline spots long; whilst *plagifera* from Tonga has only the upper spot, which is oval.

Hab. W. Indies; throughout India; Andamans; Borneo; Celebes; Tonga. *Exp.* 28 millim.

776. **Rhodoneura semitesselalis,** *Wlk. Cat.* xxxiv, p. 1246.

Differs from *myrtæa* in being fuscous; the thorax and abdomen in some specimens slightly suffused with pink. Fore wing with all three spots below the cell hyaline; the centre of the marginal area occupied by a large irregular patch of hyaline globules, outlined with ochreous and red. Hind wing with a medial band of globules similar to those on the fore wing; a number on inner area and at apex and centre of outer area.

Hab. E. Pegu; Australia. *Exp.* 26 millim.

777. **Rhodoneura loceusalis,** *Wlk. Cat.* xix, p. 903; *C. & S.* no. 4453.
Pyralis? thyralis, *Wlk. Cat.* xxxiv, p. 1234; *Moore, Lep. Ceyl.* iii, pl. 178, fig. 10; *C. & S.* no. 4499.

♀. Greenish grey; abdomen pinkish at extremity. Wings with

slight brown striæ; a marginal pink line. Fore wing with the outer margin slightly excurved at veins 2, 3, 4; an ochreous patch irrorated with pink beyond and below the end of cell, with two pairs of hyaline spots on it and a single spot below them. Underside silvery grey; the striations of the hind wing and those on the patch of fore wing bright chestnut and prominent.

Hab. Ceylon. *Exp.* 16 millim.

778. **Rhodoneura nitens**, *Butl. A. M. N. H.* (5) xx, 1887, p. 116; *Hmpsn. Ill. Het.* ix, pl. 171, fig. 8.
Pharambara hamifera, *Moore, Lep. Atk.* p. 213; *C. & S.* no. 4380.
Microsca marginepunctalis, *Leech, Entom.* 1889, p. 66, pl. 4, fig. 10.

♂. Head, thorax, and abdomen brownish white. Fore wing white, suffused with olive or pale red-brown, especially beyond the cell, and evenly striated with dark lines; indistinct antemedial, medial, and submarginal bands; a white patch striated with dark lines at or just below the apex, with a black line or patch on its lower edge. Hind wing similar but less clouded, and with medial and submarginal bands only. Underside paler, the bands bright chestnut-brown: fore wing with series of longitudinal and transverse black costal striæ; a large apical red-brown patch with a large white hamate mark on it; some golden scales on the retinaculum and silvery scales on subcostal nervure from middle to end of cell: hind wing with medial, postmedial, and submarginal bands.

Hab. Nilgiris; Ceylon; Japan; Solomons. *Exp.* 28–32 millim.

779. **Rhodoneura pallida**, *Butl. Ill. Het.* iii, p. 71, pl. 58, fig. 7.

♀. Differs from *nitens* in being paler. Fore wing suffused and striated with pale reddish brown; the apical patch red-brown, with the white black-edged strigæ small; the submarginal band of both wings regular, with a pale centre.

Hab. Japan; Sikhim; Assam. *Exp.* 24 millim.

780. **Rhodoneura glaphyralis**, n. sp.

♂. Head, thorax, and abdomen variegated pale yellow and brown. Wings pale yellow, striated with reddish brown, which forms ill-defined medial and submarginal bands to both wings; the submarginal band not continued on apical area of fore wing; six or seven short bands from the costa of fore wing to subcostal nervure. Underside of fore wing with black and white streaks on the subcostal nervures in the cell and beyond the upper angle.

Hab. Sikhim (*Möller*). *Exp.* 34 millim. Type in coll. Elwes.

781. **Rhodoneura exusta**, *Butl. Ill. Het.* iii, p. 71, pl. 58, fig. 8.
Microsca ardens, *Butl. Ill. Het.* iii, p. 71, pl. 58, fig. 9.
Microsca exusta, var. erecta, *Leech, Entom.* 1889, p. 66, pl. 4, fig. 3.

Head, thorax, and abdomen chestnut. Wings chestnut, striated

with brown. Fore wing with very indistinct subbasal and antemedial bands; a postmedial band expanding towards the costa; a prominent subapical band from costa to outer margin; a short band at outer angle. Hind wing with an indistinct subbasal band; a broad medial band. Underside of fore wing with the markings below the costa as in *nitens*; a very prominent dark medial band, interrupted in the Sikhim specimen.

Hab. Japan; Sikhim. *Exp.*, ♂ 20–33, ♀ 30 millim.

782. **Rhodoneura emblicalis,** *Moore, Lep. Atk.* p. 213; *C. & S.* no. 4379.

Pharambara sphoraria, *Swinh. Trans. Ent. Soc.* 1892, p. 18, pl. 1, fig. 17.

Head, thorax, and abdomen pale red-brown. Wings striated with red-brown; the basal two-thirds red-brown, the outer third ochreous: fore wing with a subapical line from the costa to outer margin at vein 5. Underside with series of longitudinal and transverse black streaks on the costa of fore wing; the subcostal nervure and nervules streaked with black and white; an oblique similar streak across the cell.

Hab. Sikhim; Khásis; Calcutta. *Exp.*, ♂ 24, ♀ 20 millim.

783. **Rhodoneura disparalis,** *Hmpsn. Ill. Het.* ix, ined., pl. 171, fig. 11.

♀. Head and collar bright rust-red; thorax pale. Wings reddish white; a red-brown band, which extends on the fore wing from the centre of the costa to apex, narrowing to the centre of inner margin of hind wing; outer margin red-brown; fore wing with a white triangular mark on the costa before the apex. Underside with a red-brown patch on the costa of fore wing at base.

Hab. Ceylon. *Exp.* 26 millim.

784. **Rhodoneura atripunctalis,** *Wlk. Cat.* xxxiv, p. 1523.

♂. Differs from *disparalis* in being browner; the wings striated with brown; a prominent black spot on outer margin of fore wing below the apex on both upper and under sides.

Hab. Nilgiris; Java. *Exp.* 28 millim.

785. **Rhodoneura bipuncta,** n. sp.

♂. Head dark red-brown; thorax and abdomen paler. Fore wing pale reddish chestnut, with a large medial greyish subtriangular patch on the costa and a smaller postmedial patch; an oblique ferruginous band from the costa just beyond the middle to median nervure and a more indistinct band from lower angle of cell to inner margin; two prominent white subapical spots. Hind wing pale chestnut, with a prominent medial ferruginous band. Underside of fore wing with the white subapical spots very prominent on a dark chestnut patch.

Hab. Tenasserim Valley (*Doherty*). *Exp.* 28 millim. Type in coll. Druce.

786. **Rhodoneura vinosa,** *Butl. P. Z. S.* 1892, p. 130, pl. vi, fig. 8.
Pharambara reticulata, *Moore, Lep. Atk.* p. 212 (nom. præocc.)
C. & S. no. 4382.

♂. Head, thorax, and abdomen dark red-brown, with a purplish tinge. Fore wing glistening purplish brown, evenly striated with dark lines; antemedial, medial, and postmedial red-brown bands with dark edges; a curved irregular line from the postmedial band on the costa to outer angle; a very irregular submarginal line sending spurs to the outer margin. Hind wing with no postmedial band. Underside with some black and white streaks below the subcostal nervure of fore wing.

Some specimens have a pair of white spots near the origin of vein 2 of both wings, sometimes with dark spots between the white ones.

♀ without the purplish tinge; the bands of both wings replaced by lines, which on the fore wing are Y-shaped.

Hab. Sikhim; Margharita, Assam; Borneo. *Exp.*, ♂ 37, ♀ 42 millim.

787. **Rhodoneura fasciata,** *Moore, Lep. Atk.* p. 213, pl. 7, fig. 22; *C. & S.* no. 4383.

♂. Head ferruginous; thorax pale red-brown; abdomen ochreous. Fore wing ochreous white, slightly striated with brown; a broad chestnut oblique band occupying the whole wing, except the costal and outer areas, and running up to the costa at end of cell; a black line on discocellulars and spot beyond; some silvery spots on medial area above vein 1. Hind wing with the basal half chestnut, suffused with silvery scales; the outer half ochreous, streaked with brown. Underside of fore wing with the costa, veins beyond the cell, and vein 1 speckled with black; a black patch below end of cell; two white submarginal spots below the apex. Hind wing with medial and marginal reddish bands.

Hab. Sikhim. *Exp.* 30 millim.

788. **Rhodoneura cuprealis,** n. sp.

Head, thorax, and abdomen red-brown. Fore wing with the ground-colour pale, thickly irrorated with brilliant coppery scales and crossed by about six ill-defined brilliant coppery bands, the most conspicuous being a portion of a band across the end of the cell. Hind wing similar, with a prominent broad medial band. Underside with the costal area of fore wing and inner area of hind wing pale.

Some specimens are much darker than others.

Hab. Tenasserim Valley (*Doherty*). *Exp.*, ♂ 22–24, ♀ 28 millim. Type in coll. Druce.

789. **Rhodoneura alternata**, *Moore, Lep. Atk.* p. 212; *C. & S.* no. 4378.

♀. Differs from *vinosa* in being paler. Fore wing with the lines and bands ill-defined; a darker patch beyond the cell, another on costa before apex, one submarginal, and one at outer angle. Hind wing with the lines ill-defined; the medial band prominent near inner margin; a darker patch at anal angle. Underside without the black streaks on the subcostals of fore wing.
Hab. Sikhim. *Exp.* 36 millim.

790. **Rhodoneura oligosticha**, n. sp.

♂. Head, thorax, and abdomen pale red-brown. Wings ochreous, slightly suffused with rufous and with sparse rufous striæ: fore wing with the costa dark red-brown, and obscure darker patches on discocellulars and centre of outer margin. Underside similar.
Hab. Sikhim (*Möller*). *Exp.* 28 millim. Type in coll. Elwes.

791. **Rhodoneura subcostalis**, n. sp.

♂. Head, thorax, and abdomen pale brown, irrorated with fuscous. Wings ochreous, closely striated with brown. Fore wing with an indistinct antemedial line expanding iuto a spot on median nervure; a postmedial band expanding into a spot beyond the cell; two curved lines near apex, terminating in a black submarginal spot. Hind wing with traces of a medial band and submarginal very irregular line. Underside of fore wing with the cell and veins beyond its upper angle streaked with black; a rufous streak from upper angle of cell to apex.
Hab. Simla. *Exp.* 32 millim. Type in coll. Moore.

792. **Rhodoneura ferrofusa**, n. sp.

♂. Head, thorax, and abdomen ferruginous. Fore wing ochreous, striated with ferruginous; the basal area ferruginous; a postmedial patch on the costa continued as a narrow band to inner margin; outer area with reticulated lines, which are very variable, even on the two sides of the same specimen. Hind wing ochreous, striated and reticulated with ferruginous lines.
Hab. Bombay. *Exp.* 52 millim. Type in coll. Moore.

793. **Rhodoneura uniformis**, n. sp.

♀. Head, thorax, and abdomen bright brick-red. Wings bright brick-red, with faint evenly-disposed dark striæ, which are rather more prominent on underside. Tarsal joints ringed with white.
Hab. Andamans. *Exp.* 34 millim. Type in B. M.

794. **Rhodoneura micacealis**, *Wlk. Cat.* xxxiv, p. 1275.

♂. Red-brown. Wings evenly striated with short dark lines:

fore wing with a white spot at end of cell; two antemedial, and single medial, postmedial, and subapical curved black lines: hind wing with antemedial, medial, and postmedial lines. Underside with patches of bluish-silvery scales scattered over the whole of both wings.

Hab. Ceylon; Mysol. *Exp.* 22 millim.

795. **Rhodoneura striativena,** *Hmpsn. Ill. Het.* viii, p. 126, pl. 154, fig. 1.

♂. Ochreous white. Wings slightly striated with brown: hind wing with traces of a medial band. Underside of fore wing with transverse dark striæ from the costa, and black streaks in the cell and on the nervules beyond the upper angle; some ferruginous marks below the cell.

Hab. Nilgiris, S. slopes, 3000 feet; Burma. *Exp.* 24 millim.

796. **Rhodoneura splendida,** *Butl. A. M. N. H.* (5) xx, 1887, p. 117.

♂. Dull smoky white. Wings evenly striated with brown: fore wing with a dark longitudinal streak below the costa, which forks before the outer margin. Underside with some bluish-silvery specks in the cell of fore wing, and a speck on a dark patch beyond the cell.

Hab. Andamans; Solomons. *Exp.* 20 millim.

B. *Outer margin slightly excised below the apex in both wings.*

797. **Rhodoneura bracteata,** n. sp.

♂. Head, thorax, and abdomen pale, suffused with red-brown. Wings whitish, slightly striated with red-brown. Fore wing with the basal area darker; large postmedial triangular darker patches on costa and inner margin, with a line between them; a curved submarginal line sending a spur to centre of outer margin; some pale streaks on costa. Hind wing with indistinct subbasal and medial lines and some reticulated lines on marginal area. Underside with a few metallic scales below the costa and in cell of fore wing.

Hab. Andamans. *Exp.* 19 millim. Type in coll. Moore.

798. **Rhodoneura rufareta,** n. sp.

♂. Head, thorax, and abdomen pale, suffused with reddish brown. Wings white, reticulated with red-brown. Fore wing with an antemedial line; a medial line forking towards costa and inner margin; a curved submarginal line sending an oblique spur to centre of outer margin. Hind wing with lines forming large reticulations on outer half of wing; cilia rufous. Underside of fore wing with large chestnut subtriangular ante- and postmedial patches on the costa.

Hab. Sikhim (*Möller*, *Knyvett*). *Exp.* 26 millim. Type in coll. Elwes.

C. Fore wing with the outer margin oblique and crenulate from vein 5 to outer angle.

799. **Rhodoneura hypoxantha**, n. sp.

♂. Palpi with the first two joints fringed with yellow; head, thorax, abdomen, and wings purplish black. Fore wing with indistinct yellowish spots on basal half; a large white patch reticulated with dark lines in and below the end of cell; a submarginal white spot on vein 5. Hind wing with a subbasal white spot and another beyond end of cell. Underside with the basal half of fore wing and whole hind wing spotted with bright yellow.

The specimen from Burma is larger, with the hyaline spots yellowish.

Hab. Mussooree; Sikhim; Burma. *Exp.* 28 millim. Type in coll. Moore.

800. **Rhodoneura tristis**, n. sp.

♂. Head, thorax, and abdomen red-brown. Wings red-brown, with evenly-disposed darker striæ; the basal area yellowish: fore wing with a very indistinct oblique medial line and four white specks on the costa towards apex: hind wing with indistinct antemedial, medial, and postmedial oblique lines. Underside much more varied with yellow, the striæ and lines more prominent; a whitish spot at apex of fore wing.

Hab. Sikhim (*Möller*). *Exp.* 31 millim. Type in coll. Elwes.

Sect. III. Antennæ serrated in female.

801. **Rhodoneura munda**, *Warr. MS.*

♀. Differs from *vinosa* ♀ in being of a pale reddish white. Fore wing with three medial lines, the inner and outer irregular, the middle line straight; the postmedial line more erect and less curved; the submarginal line represented by a line across the apex from the costa to outer margin. Hind wing with subbasal, medial, postmedial, and submarginal irregular lines. Underside with a white streak on the nervules beyond the upper angle of the cell of fore wing.

Hab. Sikhim. *Exp.* 30 millim. Type in B. M.

Genus **HYPOLAMPRUS**, nov.

Type, *H. striatalis*, Swinh.

Range. China; Himalayas; India; Ceylon; Burma.

Palpi slight, upturned, and reaching above vertex of head. Antennæ minutely ciliated in male. Neuration as in *Rhodoneura*, except that veins 8 and 9 of the fore wing are stalked.

SECT. I. Outer margin of both wings evenly curved.

802. **Hypolamprus striatalis,** *Swinh. P. Z. S.* 1885, p. 875; *C. & S.* no. 4385.

Pharambara intimalis, *Moore, Lep. Atk.* p. 213; *C. & S.* no. 4381.

Pale red-brown. Wings evenly striated with short lines; traces of a medial band; fore wing with indistinct postmedial and submarginal lines. Underside of fore wing with five white specks on the costa; a tuft of silver scales on the retinaculum and others below the costa; a dark spot beyond the cell. Legs banded with white.

Fig. 246.
Hypolamprus striatalis, ♂. 1/1.

Hab. Dharmsála; Calcutta; Poona; Nilgiris; Ceylon. *Exp.* 18 millim.

803. **Hypolamprus obscuralis,** n. sp.

♂. Pale chestnut; wings indistinctly striated with darker lines. Fore wing with indistinct darker medial and postmedial bands, obsolete towards inner margin; an oblique line from costa towards outer angle and irregular subapical and submarginal lines; cilia with a dark line through them. Hind wing with indistinct subbasal, medial, postmedial, and subapical lines. Underside similar.

Hab. Sikhim (*Möller*). *Exp.* 20 millim. Type in coll. Elwes.

804. **Hypolamprus lobulatus,** *Moore, Lep. Atk.* p. 214, pl. 7, fig. 12; *C. & S.* no. 4384.

♀. Head, thorax, and abdoman brownish ochreous, suffused with silvery scales. Fore wing ochreous white; some brown specks on inner margin; two brown spots below the middle of cell; a postmedial band narrowing to inner margin; a subapical line arising from a spot on the costa and ending on outer margin at vein 3. Hind wing ochreous white; a brown spot near base; a medial nearly straight band; traces of a curved submarginal line; a marginal line. Underside with a ferruginous streak below the costa; the subcostal nervure and nervules streaked with black; silvery scales in and below the cell.

Hab. Sikhim. *Exp.* 26 millim.

805. **Hypolamprus atrostriatus,** n. sp.

♂. Ochreous, suffused with ferruginous red-brown; wings sparsely striated with red-brown, some of the striæ forming large reticulations on the outer area of both wings. Underside of fore wing with black and white streaks on the subcostal nervures in and beyond the cell.

Hab. Nága Hills, 3000 feet (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

SECT. II. Hind wing with the outer margin excised towards anal angle.

806. **Hypolamprus subrosealis**, *Leech, Entom.* 1889, p. 66, pl. iv, fig. 14.

♂. Pale red-brown. Wings evenly speckled with fuscous; hind wing redder. Underside of fore wing with black streaks on the costa and in and beyond the cell; series of brilliant opalescent globular scales in the cell and on the nervules beyond towards the apex; a white spot with a black speck in the centre at apex.
Hab. China; Dharmsála; Ceylon. *Exp.* 22 millim.

807. **Hypolamprus angulalis**, *Moore, Lep. Atk.* p. 214; *C. & S.* no. 4387.

♂. Differs from *subrosealis* in the hind wing being more excised near anal angle; the cilia white towards outer angle of fore wing and anal angle of hind wing. Underside of both wings suffused with silvery scales; the discocellulars black; no opalescent scales in and beyond the cell of fore wing.
Hab. Rangoon. *Exp.* 20 millim.

SECT. III. Fore wing long; hind wing with the apex acute, the outer margin straight.

808. **Hypolamprus trifascialis**, *Moore, P. Z. S.* 1877, p. 614, pl. 60, fig. 9; *C. & S.* no. 4468.

♂. Head, thorax, abdomen, and fore wing ferruginous; the last with the costa, apex, and outer area pale. Hind wing with the basal two-thirds ferruginous, deeper in tone outwardly; post-medial area whitish; outer area pale ferruginous. Underside brighter, with rich chestnut maculate bands across both wings; the ground-colour of hind wing whitish.
Hab. Burma; Andamans. *Exp.* 30 millim.

Genus **CAMADENA**.

Camadena, *Moore, Lep. Atk.* p. 214.

Type, *C. vespertilionis*, Moore.
Range. Sikhim.
Palpi upturned, reaching vertex of head; antennæ simple. Hind leg of male with the tibia extremely long and swollen, the terminal pair of spurs short; a tuft of long hair from base, the tarsus very short; normal in female. Fore wing very acute and produced at apex; veins 8 and 9 stalked. Hind wing very acute and produced at apex.

809. **Camadena vespertilionis**, *Moore, Lep. Atk.* p. 214; *C. & S.* no. 4388.
Caustoloma acutipennis, *Moore, Lep. Atk.* p. 230; *C. & S.* no. 3144.

♂. Yellow; the vertex of head, thorax, and abdomen suffused with red-brown. Wings yellow, slightly striated with red-brown. Fore wing with a red-brown band just beyond the middle, broad toward costa, narrow towards inner margin, with a silvery speck

Fig. 247.—*Camadena vespertilionis*, ♀. 1/1.

on it at end of cell and extending along the costa to apex; an indistinct series of submarginal double specks. Hind wing with a dark spot at end of cell, with a silvery speck on it, and an indistinct submarginal series of specks.

♀. Suffused with brown; the wings much more thickly striated with brown; the band on fore wing nearly obsolete; the silvery spots and submarginal double specks much more prominent on both wings.

Hab. Sikhim. *Exp.*, ♂ 32, ♀ 40 millim.

Genus HERDONIA.

Herdonia, *Wlk. Cat.* xix, p. 963 (1859).

Type, *H. osacesalis*, Wlk.
Range. China; Sylhet; Burma.
Palpi short and porrect. Antennæ almost simple in both sexes. Fore wing with the costa excised at middle; vein 6 from below angle of cell; 7, 8, 9 from the angle; 10 absent. Hind wing with vein 5 from just above lower angle of cell; a forked veinlet in the cell.

810. **Herdonia osacesalis**, *Wlk. Cat.* xix, p. 964; *Feld. Reis. Nov., Lep.* pl. 134, fig. 4; *C. & S.* no. 4427.

Head, thorax, and abdomen pale red-brown. Fore wing silvery red-brown, almost entirely covered with broad conjoined darker strigæ, some of which form a highly irregular bright chestnut submarginal band; apex suffused with fuscous and irrorated with silvery scales. Hind wing opalescent white, with basal and medial red-brown bands, broadest at inner margin and having

paler centres; a marginal red-brown band striated with black, with

Fig. 248.—*Herdonia osacesalis*, ♀. 1/1.

a black line on its inner edge and another through the centre, beyond which the colour is paler.

Hab. China; Sylhet; Rangoon. *Exp.* 46 millim.

Genus **DYSODIA**.

Dysodia, *Clemens, Pr. Ac. N. Sc. Phil.* 1860, p. 349.
Platythyris, *Gr. & R. Ann. N. Y. Lyc.* viii, p. 361 (1867).
Varnia, *Wlk. Journ. Linn. Soc.* vii, p. 69 (1864).
Pachythyris, *Feld. Reis. Nov., Lep.* pl. 75, fig. 1 (1867).

Type, *D. vitrina*, Boisd., from N. America.

Range. N. and S. America; throughout India, Ceylon, and Java.

Palpi thickly scaled, upturned, reaching above vertex of head, the third joint acute. Antennæ simple in both sexes. Legs with femora and tibiæ very hairy. Fore wing excurved at veins 2, 3, 4; veins 7, 8, 9 from close to the angle of cell. Hind wing with vein 5 from lower angle of cell; the outer margin irregular and excised below the apex. Thorax and abdomen stout.

811. **Dysodia ignita,** *Wlk. Cat.* xxxiii, p. 825; *C. & S.* no. 2211.
Varnia fenestrata, *Moore, P. Z. S.* 1881, p. 376; *C. & S.* no. 2210.
Varnia taprobana, *Moore, Lep. Ceyl.* iii, p. 67, pl. 151, fig. 7; *C. & S.* no. 2214.
Varnia inæqualis, *Wlk. Cat.* xxxiii, p. 828; *C. & S.* no. 2212.
Pachythyris siculoides, *Feld. Reis. Nov., Lep.* pl. 75, fig. 1.
Pachythyris rajah, *Boisd. Lép. Hét.* p. 492; *C. & S.* no. 210.

Head and collar dark red-brown; thorax, abdomen, and wings dark red-brown or ochreous suffused with fiery red; wings with numerous brown striæ. Fore wing with an irregular dark band wide at costa; an oblique subapical line from the costa to outer margin; a submarginal band from vein 4 to inner margin, sometimes reduced to a fine line. Hind wing

Fig. 249.
Dysodia ignita, ♂. 1/1.

with several fine short lines on the outer half, these being obscured in the specimens which are suffused with dark brown.

The colour and distribution of the suffusion are very variable.

The form *inæqualis*=*fenestrata* has two hyaline spots at the end of cell of hind wing, generally connected and large.

Hab. Throughout India, Ceylon, and Java. *Exp.* 32–38 millim.

812. **Dysodia viridatrix,** *Wlk. Cat.* xv, p. 1777; *C. & S.* no. 2207.

Head, thorax, and abdomen yellowish green. Wings yellowish green, with slight dark striæ. Fore wing with some dark strigæ on costa; a postmedial oblique line; an outwardly-oblique line from the costa to outer margin; a short line near outer angle; a yellow patch at end of cell; some yellow suffusion beyond the postmedial line below the costa. Hind wing with a hyaline spot at end of cell; indistinct postmedial and submarginal lines. Cilia yellow.

Larva bores in wood, living in a cocoon of silk and sawdust, over which is a spiral strip of bark.

Hab. Sikhim; Bangalore; Ceylon. *Exp.*, ♂ 25, ♀ 28 millim.

813. **Dysodia albifurca,** n. sp.

♂. Head and collar red-brown; thorax paler; abdomen with the first five segments pale ochreous, the terminal segments red-brown; a very prominent dorsal tuft of scales on fifth segment. Wings red-brown with darker striæ, the basal area and centre of outer area of both wings ochreous; fore wing with a medial **Y**-shaped whitish band and two white spots on the costa towards apex. Underside with the band more prominent and a deep chestnut band beyond it crossing both wings.

Hab. Sikhim (*Möller*). *Exp.* 26 millim. Type in coll. Elwes.

Genus GLANYCUS.

Glanycus, *Wlk. Cat.* iii, p. 634 (1855).

Type, *G. insolitus*, Wlk.

Range. Sikhim; Sylhet.

Palpi upturned, reaching vertex of head and thickly scaled. Antennæ of male fasciculated. Legs hairy; mid tibiæ with one pair of spurs, hind tibiæ with two pairs. Fore wing with the outer margin very obliquely rounded; veins 7 and 8 stalked. Hind wing excised below the apex; the cell open.

SECT. I. Hind wing with the anal angle truncate.

814. **Glanycus insolitus,** *Wlk. Cat.* iii, p. 635; *Butl. Ill. Het.* v, pl. 84 fig. 12; *C. & S.* no. 784.

♀. Head, thorax, and abdomen black, shot with metallic blue; collar and tegulæ fringed with crimson; abdomen with the basal

segment crimson; a dorsal crimson line; the terminal segments fringed with crimson. Fore wing blue-black, a broad basal crimson band and narrower antemedial, medial, and postmedial bands, which are conjoined into reticulations, the postmedial band running outwards to centre of outer margin, then along it to the outer angle, leaving two spots on the margin, then inwards to join the medial band; a hyaline streak on the discocellulars. Hind wing blue-black; the inner and outer areas crimson, the former giving off a band to median nervure, and the latter with three blue-black spots on it; a large angled hyaline patch in the end of cell.

Fig. 250.
Glanycus insolitus, ♀. 1/1.

Hab. Sylhet; Sikhim. *Exp.* 38 millim.

SECT. II. Hind wing with the anal angle produced.

815. **Glanycus tricolor**, *Moore, Lep. Atk.* p. 38; *Waterh. Aid,* ii, pl. 131, fig. 1; *C. & S.* no. 785.

♂. Blue-black; the collar and first abdominal segment broadly fringed with crimson; abdomen with lateral crimson bands meeting at the extremity. Fore wing with a hyaline streak on the discocellulars. Hind wing with a very large hyaline spot in the cell extending to near outer margin.

Hab. Sikhim. *Exp.* 36 millim.

Genus **HYPERTHYRIS**.

Hyperthyrus, *Leech, Trans. Ent. Soc.* 1889, p 121.

Type, *H. aperta*, Leech.
Range. China; Sikhim.

Palpi upturned, reaching above vertex of head, the 1st and 2nd joints heavily scaled, the 3rd joint naked. Antennæ slightly ciliate. Femora and tibiæ thickly scaled; mid tibia with one pair of spurs, hind tibiæ with two pairs. Fore wing with the cell closed; vein 6 from below the angle, 7, 8, 9 from the angle. Hind wing with the cell open; veins 4, 5, and 6, 7 stalked to near the margin.

816. **Hyperthyris aperta**, *Leech, Trans. Ent. Soc.* 1889, p. 122, pl. vii, fig. 7.

♂. Head black; frons and palpi in front grey; collar black, tipped with golden brown; abdomen black. Fore wing hyaline,

slightly golden brown at base; the margins broadly black; a large triangular black mark from the costa to lower angle of cell; veins narrowly black. Hind wing with the margins broadly black; a large hyaline space above median nervure and a smaller one below it.

Fig. 251.
Hyperthyris aperta, ♂. $\frac{1}{1}$.

Hab. Kiukiang, China; Sikhim.
Exp. 24 millim.

Species formerly recorded as Indian which is omitted.

Thyridiphora fenestrata, Warr., C. & S. no. 1773 B, is a Pyrale.

Family LIMACODIDÆ.

Fore wing with two internal veins, vein 1 *b* forked at the base. Hind wing with vein 8 arising free, then bent down and usually anastomosing shortly with 7 near the base of the cell; three internal veins.

Larva: *Limaciform*, and either bearing series of spinous stinging tubercles, or smooth and segmented, or unsegmented with very thick transparent cuticle; the head, legs, and claspers small and often retractile.

Cocoon: hard and compact; round or oval in shape, with a lid for the escape of the imago prepared by the larva.

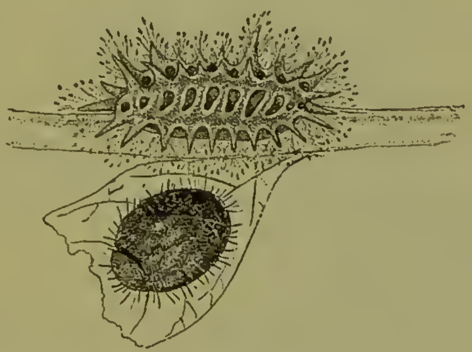

Fig. 252.—Larva and cocoon of *Thosea aperiens*. $\frac{1}{1}$.
(From Moore, Lep. Ceyl. ii, pl. 130, fig. 4.)

Key to the Genera.

A. Fore wing short, the outer margin evenly rounded.
  a. *Larva* (of known species) segmented and bearing series of spinous tubercles.
    Imago: head and thorax smoothly scaled; fore wing with vein 11 not curved along 12.

a^1. Palpi porrect.
a^2. Palpi extremely elongate.
a^3. Palpi with a terminal brush of hairs; fore wing with veins 7, 8, 9 stalked .... 1. SCOPELODES, p. 373.
b^3. Palpi without a terminal brush; fore wing with vein 7 from the cell.......................... 2. HYPHORMA, p. 375.
b^2. Palpi shorter, but reaching beyond the frontal tuft.
a^3. Fore wing with vein 7 from below angle of cell.
a^4. Fore wing with veins 8, 9, 10 stalked .... 3. MACROPLECTRA, [p. 376.
b^4. Fore wing with vein 10 from the cell....................... 4. OXYPLAX, p. 376.
b^3. Fore wing with vein 7 from angle of cell.
a^4. Fore wing with veins 8 and 9 stalked .... 7. NATADA, p. 380.
b^4. Fore wing with veins 8, 9, 10 stalked .... 9. BIRTHAMA, p. 384.
c^3. Fore wing with vein 7 stalked with 8 and 9.
a^4 Hind wing with veins 6 and 7 on a short stalk or from cell.
a^5. Fore wing short, broad, and rounded.................. 5. SUSICA, p. 377.
b^5. Fore wing with the apex more produced.
a^6. Fore wing with vein 10 from angle of cell or before it.
a^7. Fore wing with the apex somewhat rectangular. . 6. THOSEA, p. 377.
b^7. Fore wing with the apex rounded.............. 12. PARASA, p. 387.
b^6. Fore wing with vein 10 stalked with 7, 8, 9...... 8. TETRAPHLEPS, [p. 383.
b^4. Hind wing with veins 6 and 7 on a long stalk.............. 10. CONTHEYLA, p. 384.
c^2. Palpi slighter and not reaching beyond frontal tuft.
a^3. Hind wing with vein 8 anastomosing with 7 near the base........ 11. MIRESA, p. 385.
b^3. Hind wing with vein 8 anastomosing with 7 near end of cell...... 13. SPATULIFIMBRIA, [p. 391.
b^1. Palpi upturned.
a^2. Palpi reaching vertex of head.
a^3. Fore wing with veins 7, 8, 9, 10 stalked .... 14. IDONAUTON, p. 391.
b^3. Fore wing with veins 7, 8, 9 stalked.
a^4. Hind tibia with two pairs of spurs; male with proximal half of antennæ pectinated........ 15. CHALCOCELIS, [p. 392.
b^4. Hind tibia with one pair of spurs; male with antennæ simple .... 16. TRIPLOPHLEPS, [p. 392.

c³. Fore wing with veins 8 and 9 stalked .... 17. ORTHOCRASPEDA, [p. 393.
d³. Fore wing with veins 8, 9, 10 stalked .... 18. CERATONEMA, [p. 393.
b². Palpi extending above vertex of head; fore wing with vein 7 from below angle of cell, 8 and 9 stalked...... 19. ARÆOGYIA, p. 394.
b. *Larva* (of known species) segmented and non-tuberculate.
Imago: Fore wing with vein 11 curved and running along vein 12.
a′. Palpi short and slender; male with proximal half of antennæ bipectinated; hind wing with veins 6 and 7 from the cell.
a². Head and thorax smoothly scaled .. 20. CANIA, p. 395.
b². Head and thorax clothed with erect pile.......................... 21. ALTHA, p. 396.
b′. Palpi reaching vertex of head; male with antennæ simple; hind wing with veins 6 and 7 stalked .... 22. NAROSA, p. 398.
c. *Larva* non-segmented, smooth, and oval, with very thick cuticle.
Imago: Fore wing with vein 11 not curved; head and thorax clothed with erect pile.
a′. Hind wing with vein 8 not sending a spur to the costa .... 23. BELIPPA, p. 399.
b′. Hind wing with vein 8 sending a spur to the costa .... 24. NAGODA, p. 400.
B. Fore wing elongate, the apex produced, the outer margin excised, veins 6, 7, 8, 9, 10 stalked. Palpi upturned .... 25. MAHANTA, p. 401.

Genus SCOPELODES.

Scopelodes, *Westw. Nat. Libr.* 37 (*Ent.* vii.), p. 222 (1841).

Type, *S. unicolor*, Westw.

Range. N. China; Sikhim; Assam; Sylhet; Burma; Ceylon; Borneo; Java.

Antennæ in male with proximal half bipectinated. Palpi with 2nd and 3rd joints very long, the latter ending in a large brush of hairs. Legs hairy; mid tibia without spurs, hind tibia with one pair of spurs in male, two pairs in female. Fore wing with veins 7, 8, and 9 stalked together; vein 11 straight. Hind wing with veins 6 and 7 from angle of cell, 8 anastomosing with 7 near the base. There are indications of numerous fine veinlets between vein 1 *b* of fore wing and inner margin, and vein 8 of hind wing and costa.

SECT. I. Hind wing with veins 6 and 7 from cell in male, stalked in female.

817. **Scopelodes venosa,** *Wlk. Cat.* v, p. 1105; *C. & S.* no. 1270.
Scopelodes ursina, *Butl. Ill. Het.* vi, p. 3, pl. 101, figs. 7, 8; *C. & S.* no. 1269.
Scopelodes aurogrisea, *Moore, Lep. Ceyl.* ii, p. 126, pl. 128, figs. 1, 1 *a*, *b* (larva and cocoon); *C. & S.* no. 1265.
Scopelodes testacea, *Butl. Ill. Het.* v, p. 3, pl. 101, fig. 5; *C. & S.* no. 1268.

Palpi brown, sometimes tinged with fuscous, the brush whitish at base, black at tip. Head, thorax, and fore wing varying from pale silky ochreous to smoky brown. Hind wing paler. Abdomen yellow, the distal segments terminating in a black spot or sometimes dorsally fringed with black; anal tuft black.

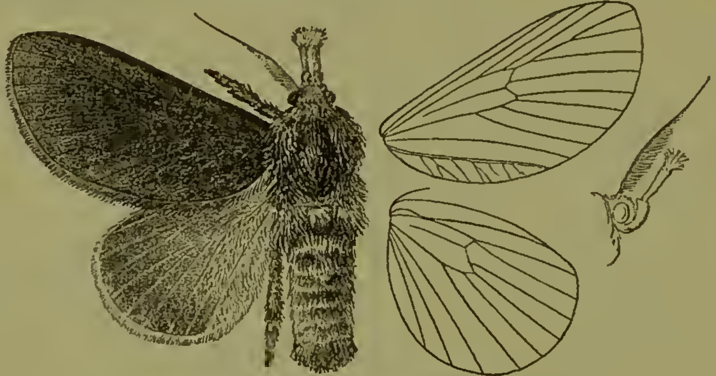

Fig. 253.—*Scopelodes venosa*, ♂. $\frac{1}{1}$.

The darkest form *venosa*, from Sikhim and Sylhet, is smoky brown, with the inner margin of hind wing yellow, the veins on underside standing out pale on a dark ground; legs almost black. The form *ursina*, also from Sikhim and Sylhet, is ruddy brown, the hind wing fuscous in male; *aurogrisea*, from Ceylon, is paler, the hind wing ochreous, with fuscous margin in both sexes; *testacea*, from Sikhim, Sylhet, Moulmein, is pale ochreous without a pale border to hind wing.

Larva: green above, yellow below; two rows of large, broad, densely-spined tubercles; a red, white, and blue transverse dorsal stripe on 8th somite; a black spot on anal segment.

Cocoon purple, brown, and oval.

Hab. Sikhim; Sylhet; Moulmein; Ceylon. *Exp.*, ♂ 51–64, ♀ 74 millim.

818. **Scopelodes sericea,** *Butl. A. M. N. H.* (5) vi, p. 63; *id. Ill. Het.* vi, pl. 101, fig. 6; *C. & S.* no. 1267.

♀. Differs from *venosa* in the palpi being more thickly clothed with hair, and uniform fulvous in colour. Wings silky ochreous.

Hab. Sikhim. *Exp.* 78 millim.

SECT. II. Hind wing with veins 6 and 7 stalked in both sexes.

819. **Scopelodes unicolor,** *Westw. Nat. Libr.* xxxvii, p. 222, pl. 28, fig. 2.
Scopelodes palpalis, *Wlk. Cat.* v, p. 1105; *C. & S.* no. 1266.
Scopelodes vulpina, *Moore, Lep. Atk.* p. 73, pl. 3, fig. 22; *C. & S.* no. 1271.
Bethura minax, *Wlk. Journ. Linn. Soc.* vi, p. 173.
Nyssia micacea, *Wlk. Cat.* xxxii, p. 481.

Differs from *sericea* in the palpi, head, thorax, and fore wing being redder brown; hind wing uniform pale yellow; abdomen more orange.

Hab. Sikhim; Assam; Java; Borneo. *Exp.*, ♂ 44, ♀ 60 millim.

820. **Scopelodes contracta,** *Wlk. Cat.* v, p. 1105.

♂. Palpi blackish, the base of brush pale. Head and thorax dark brown; abdomen blackish, the sides and extremity clothed with golden-yellow hairs. Wings very dark brown, somewhat darker at apex of fore wing and inner margin of hind wing.

Hab. China; Sikhim. *Exp.* 37 millim.

Genus HYPHORMA.

Hyphorma, *Wlk. Cat.* xxxii, p. 493 (1865).

Type, *H. minax*, Wlk.

Range. N. China; Sikhim.

♀. Antennæ simple. Palpi with no terminal brush of hairs. Hind tibia with a terminal pair of spurs. Fore wing with vein 7 from end of cell, 8 and 9 stalked, 10 from before the angle. Abdomen with long lateral and ventral tufts of hair.

821. **Hyphorma minax,** *Wlk. Cat.* xxxii, p. 493.

♀. Head, thorax, and abdomen red-brown, the vertex of thorax and basal segments of abdomen deep red, the tufts of hair on

Fig. 254.—*Hyphorma minax*, ♀. ¹⁄₁.

abdomen pale at sides and below. Fore wing silky red-brown; an oblique dark line from the costa before the apex to lower angle of

cell; another from the same point on the costa curved to outer angle. Hind wing paler. Fore tibia with a silvery-white spot.

Hab. N. China; Sikhim. *Exp.* 44 millim.

Genus **MACROPLECTRA**, nov.

Type, *M. minutissima*, Swinh.

Range. Burma.

♂. Antennæ heavily bipectinated to three-fourths length. Palpi long and porrect, the 3rd joint minute. Hind tibia with two pairs of long spurs. Fore wing with vein 7 given off below the angle of cell; veins 8, 9, 10 stalked. Hind wing with veins 6 and 7 from angle of cell.

Fig. 255.
Macroplectra minutissima, ♂. $\frac{2}{1}$.

822. **Macroplectra minutissima**, *Swinh. Trans. Ent. Soc.* 1890, p. 195, pl. vi, fig. 11.

♂. Head, thorax, abdomen, and wings ochreous. Fore wing with a dark line from the costa before the apex to outer angle. Hind wing paler.

Hab. Rangoon. *Exp.* 12 millim.

Genus **OXYPLAX**, nov.

Type, *O. ochracea*, Moore.

Range. Khásis; Ceylon.

♂. Antennæ bipectinated to the tips. Palpi stout and porrect, reaching beyond the frontal tuft. Hind tibia without spurs. Fore wing with the apex produced upwards, the outer and inner margins forming a continuous curve; vein 7 from below the angle of cell, 8 and 9 stalked. Hind wing with veins 6 and 7 from angle of cell, 8 anastomosing with 7 to near end of cell.

823. **Oxyplax ochracea**, *Moore, Lep. Ceyl.* ii, p. 129, pl. 129, figs. 3, 3 *a*; *C. & S.* no. 1297.

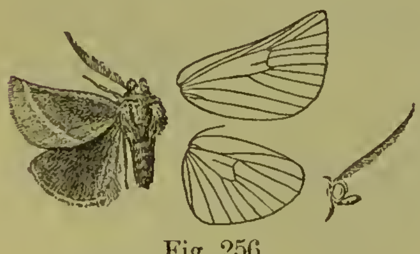

Fig. 256.
Oxyplax ochracea, ♂. $\frac{1}{1}$.

♂. Head pale, fuscous at sides; thorax fulvous. Fore wing fulvous, suffused with fuscous below the basal part of costa and towards outer margin; a curved white line from apex to centre of inner margin. Abdomen and hind wing fuscous.

Larva: pale green, whitish above, with two dorsal rows of black spots; a black dorsal patch on 1st somite and single spot on anal somite;

lateral and sublateral series of spatulate spinous tubercles, those at anterior and posterior ends pinkish.

Cocoon round and pale brown.

Hab. Khásis; Ceylon. *Exp.* 26 millim.

Genus **SUSICA.**

Susica, *Wlk. Cat.* v, p. 1113 (1855).
Tadema, *Wlk. Cat.* vii, p. 1758 (1856).

Type, *S. pallida*, Wlk.

Range. China; Nepal; Sikhim; Moulmein.

Antennæ bipectinated to two-thirds length in male, simple in female. Palpi long, the 3rd joint short. Hind tibia with two pairs of spurs in both sexes. Fore wing short, broad, and rounded; veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 stalked.

824. **Susica pallida,** *Wlk. Cat.* v, p. 1114; *C. & S.* no. 1303; *Butl. Ill. Het.* vi, pl. 102, fig. 4.
Tadema sinensis, *Wlk. Cat.* vii, p. 1759.

♂. Pale silky brown. Fore wing with an oblique line from the costa just before the apex to inner margin before middle, expanding into a small spot beyond the lower end of cell; a submarginal line

Fig. 257.—*Susica pallida*, ♂. $\frac{1}{1}$.

from the same point on the costa to outer margin above outer angle, more or less angled below the costa. Hind wing slightly browner. Underside of fore wing suffused with black near the base.

Hab. China; Nepal; Sikhim; Moulmein. *Exp.*, ♂ 25, ♀ 48 millim.

Genus **THOSEA.**

Thosea, *Wlk. Cat.* v, p. 1068 (1855).
Aphendala, *Wlk. Cat.* xxxiii, p. 494 (1865).
Anzabe, *Wlk. Cat.* v, p. 1093 (1855).

Type, *T. unifascia*, Wlk.

Range. Throughout India, Ceylon, and Burma; China; Java.

Palpi projecting beyond frontal tuft. Fore wing with the apex somewhat rectangular; veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 from cell or on a short stalk. Mid tibia with one pair of spurs, hind tibia with two pairs.

SECT. I. Male with the antennæ bipectinated to tips.

825. **Thosea cana**, *Wlk. Cat.* xxxii, p. 484; *C. & S.* no. 1295; *Moore, Lep. Ceyl.* ii, pl. 130, figs. 3, 3 *a*, *b* (larva).
Aphendala transversata, *Wlk. Cat.* xxxii, p. 495; *C. & S.* no. 1298.

Fig. 258.—*Thosea cana*, ♂. 1/1.

Palpi long and slight. Greyish brown; fore wing with a dark oblique line with light outer edge from centre of costa to inner margin; a similar but erect line from costa before apex to outer angle; a dark speck at end of cell. Hind wing slightly browner.

An ochreous race is found at Dalhousie and Murree.

Larva green; a yellowish-white dorsal stripe; a subdorsal row of short spinous tubercles; a sublateral row of larger tubercles; spiracles with pale rings.

Cocoon purplish brown and oval.

Hab. Kulu; Sikhim; Poona; Nilgiris; Ceylon. *Exp.*, ♂ 26, ♀ 30 millim.

826. **Thosea aperiens**, *Wlk. Cat.* xxxii, p. 476; *C. & S.* no. 1294; *Moore, Lep. Ceyl.* ii, pl. 130, figs. 4, 4 *a* (larva).

Differs from *cana* in having the palpi shorter and stouter and the lines of the fore wing paler; the first line much further from the base.

Larva grass-green above, purple-brown below; subdorsal and sublateral series of spinous tubercles; a dorsal series of round purple-brown spots and lateral series of oval spots.

Hab. Ceylon. *Exp.*, ♂ 30, ♀ 35 millim.

827. **Thosea tripartita**, *Moore, Trans. Ent. Soc.* 1884, p. 376; *C. & S.* no. 1299; *Forsayeth, Trans. Ent. Soc.* 1884, pl. 14, fig. 14 (larva).

Differs from *cana* in the basal half of the fore wing being dark brown, the pale line bounding it more erect; the submarginal pale line outwardly oblique and reaching the margin above outer angle.

Larva green, with subdorsal series of small and sublateral series of long spinous tubercles; dorsal and lateral series of blue spots.

Hab. Dharmsála; Sikhim; Manpuri; Ganjam; Jubbulpore; Mhow. *Exp.* 26 millim.

828. **Thosea recta**, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 3.

♂. Differs from *tripartita* in having the fore wing slightly more produced at apex, and suffused with white below the costa and

beyond the antemedial line; the submarginal line absent; the costa, basal area below the cell, and a large patch at outer angle dark. Head, thorax, and abdomen reddish brown.

Hab. Nawala-pittia, Ceylon. *Exp.* 22 millim.

829. **Thosea fasciata**, *Moore, P. Z. S.* 1888, p. 403; *Butl. Ill. Het.* vii, pl. 124, fig. 6; *C. & S.* no. 1296 A.

♂. Head, thorax, abdomen, and fore wing red-brown. Fore wing irrorated with dark scales; the basal area slightly darker red-brown, with an erect outer edge; no submarginal line; a dark speck at end of cell. Hind wing duller brown; the underside paler and irrorated with black scales.

Hab. Dharmsála. *Exp.* 34 millim.

830. **Thosea sinensis**, *Wlk. Cat.* v, p. 1093.

Parasa loesa, *Moore, Lep. E. I. Co.* ii, p. 417, pl. 11 *a*, fig. 12; *C. & S.* no. 1286 A.

Head, thorax, abdomen, and fore wing grey; the last irrorated with dark scales; a dark speck at end of cell; an oblique dark line from costa before apex to inner margin beyond the middle. Hind wing rather duller brown. Male with a conspicuous white spot at end of fore tibia.

Larva yellow or green, with a white or yellow dorsal stripe, sometimes with a red spot at middle, subdorsal and sublateral series of spinous tubercles reddish towards tips.

Cocoon purplish grey.

Hab. Hongkong; Formosa; Cachar; Pegu; Java. *Exp.*, ♂ 30, ♀ 40 millim.

831. **Thosea unifascia**, *Wlk. Cat.* v, p. 1068; *C. & S.* no. 1277.

Differs from *sinensis* in being red-brown instead of grey.

Hab. Rangoon; Moulmein; Bhamo. *Exp.*, ♂ 36, ♀ 40 millim.

832. **Thosea cervina**, *Moore, A. M. N. H.* (4) xx, p. 348; *id. Lep. Ceyl.* ii, pl. 129, figs. 2, 2 *a* (larva); *C. & S.* no. 1275.

Thosea duplexa, *Moore, Lep. Ceyl.* ii, p. 130, pl. 131, fig. 3, ♀; *C. & S.* no. 1276.

♂. Head, thorax, and abdomen red-brown. Fore wing silky grey-brown, with a dark speck at end of cell, and a slightly incurved line from costa just before apex to near outer angle which is red-brown with a pale outer edge. Hind wing and underside dull brown. Antennæ with basal joint pale; a conspicuous white spot at end of fore tibia.

♀. With the submarginal line of fore wing erect; the basal joint of antennæ dark; no white spot on tibia.

Larva green, with a yellow-bordered dorsal irregular band, linear and purplish anteriorly, dilated at middle and cleft behind,

purple streaked, and with the angles at middle red; anterior and posterior subdorsal spinous tubercles; lateral and sublateral series of longer tubercles.

Hab. Sikhim; Ceylon. *Exp.*, ♂ 38, ♀ 44 millim.

833. **Thosea rara**, *Swinh. P. Z. S.* 1889, p. 408, pl. 43, fig. 9.

♀. Differs from *cervina* in the postmedial line of fore wing being pale and oblique, with a diffused fuscous band on its outer edge; nervules near outer margin pale.

Hab. Thyetmyo, Burma. *Exp.* 40 millim.

834. **Thosea cotesi**, *Swinh. MS.*

♂. Head, thorax, and abdomen brown, the scales with pale tips. Fore wing brown, irrorated with pale scales; a pale line from apex to inner margin beyond the middle. Hind wing nearly black, the cilia pale.

♀. Paler; the oblique line on fore wing dark.

Hab. Darang, Assam. *Exp.*, ♂ 22, ♀ 26 millim.

Sect. II. Male with the distal half of the antennæ serrated.

835. **Thosea divergens**, *Moore, Lep. Atk.* p. 75, pl. 3, fig. 23; *C. & S.* no. 1325.

Aphendala divaricata, *Moore, Trans. Ent. Soc.* 1884, p. 376; *C. & S.* no. 1296.

♂. Differs from *aperiens* in being pale reddish brown; the oblique and submarginal lines of fore wing fine, dark, and starting from the same point on the costa.

Hab. Sikhim; Assam; Nágas. *Exp.* 34 millim.

Genus **NATADA**.

Natada, *Wlk. Cat.* v, p. 1108 (1855).
Phocoderma, *Butl. Ill. Het.* vi, p. 4 (1886).
Phlossa, *Wlk. Cat.* xv, p. 1673 (1858).

Type, *N. rufescens*, Wlk.

Range. Throughout India, Ceylon, and Burma; China.

Palpi extending beyond frontal tuft. Hind tibia with two pairs of spurs. Fore wing with vein 7 from angle of cell, 8 and 9 stalked. Hind wing with veins 6 and 7 from the cell, or on a short stalk.

Sect. I. Male antennæ bipectinate to apex, the branches short.

836. **Natada rufescens**, *Wlk. Cat.* v, p. 1109; *C. & S.* no. 1273; *Butl. Ill. Het.* vi, pl. 102, fig. 10.

♂. Head, thorax, and abdomen brown, the thorax and abdomen suffused with fiery red above. Fore wing brown, the basal area rather darker, and bounded by a straight oblique antemedial dark line; an erect dark line from costa before apex to outer margin above outer angle. Hind wing and underside rather paler.

Fig. 259.
Natada rufescens, ♂. $\frac{1}{1}$.

Hab. Rangoon. *Exp.* 34 millim.

837. **Natada convergens**, *Wlk. Cat.* iv, p. 868; *C. & S.* no. 979.

♀. Head, thorax, and abdomen pale ochreous. Fore wing pale ochreous, irrorated with dark brown scales; a brown speck at end of cell; costa red-brown; an oblique brown line from the costa, before the apex, to centre of inner margin; a red-brown line from nearly the same point on the costa to outer margin above the angle, curved below the costa. Hind wing reddish brown. Underside pale; hind wing irrorated with dark scales.

Hab. Sylhet. *Exp.* 50 millim.

838. **Natada conjuncta**, *Wlk. Cat.* v, p. 1150.
Natada neutra, *Swinh. Trans. Ent. Soc.* 1890, p. 195.
Phlossa fimbriares, *Wlk. Cat.* xv, p. 1673.
Miresa cuprea, *Moore, Lep. Atk.* p. 74, pl. 3, fig. 8; *C. & S.* no. 1310.

♂. Head and collar pale or copper colour; thorax and abdomen dark brown. Fore wing dark brown; the outer two-thirds silky in texture, with some short strigæ of raised scales; a dark dot at end of cell; a submarginal coppery band, narrow at middle, wide towards apex and outer angle. Hind wing and underside pale brown.

Hab. N. China; Formosa; Sikhim; Rangoon; E. Pegu. *Exp.* 26 millim.

839. **Natada cephica**, *Swinh. Trans. Ent. Soc.* 1890, p. 192.

♂. Palpi longer. Head and thorax dark brown, the thorax black posteriorly. Fore wing pale reddish brown, the costa and outer margin dark brown; an obsolescent waved broken postmedial black line, bent inwards at lower angle of cell and reaching the centre of inner margin. Abdomen and hind wing pale brown. In some specimens the fore wing is wholly clouded with fuscous.

Hab. Rangoon. *Exp.* 18 millim.

Sect. II. Male antennæ bipectinate to apex, the branches long.

840. **Natada nararia**, *Moore, Lep. E. I. Co.* p. 415, pl. 21, figs. 8, 8 *a* (larva); *C. & S.* no. 1287.
Susica cosmiana, *Swinh. P. Z. S.* 1886, p. 440, pl. 40, fig. 9; *C. & S.* no. 1301.

Susica suffusa, *Moore, P. Z. S.* 1888, p. 403; *Butl. Ill. Het.* vii, p. 41, pl. 124, fig. 5; *C. & S.* no. 1315 B.
Susica fraterna, *Moore, Lep. Ceyl.* ii, p. 131; *C. & S.* no. 1302.
Susica signata, *Moore, Lep. Ceyl.* ii, p. 131; *C. & S.* no. 1304.

Pale brownish ochreous. Fore wing with the basal two-thirds redder, and bordered outwardly by a dark brown somewhat diffused slightly curved line.

The form *signata*, from Ceylon, has the fore wing more or less suffused with brown, sometimes with a conspicuous black dot at end of cell.

Larva yellowish green above, pink below; a yellow or pinkish dorsal band; a subdorsal series of red-tipped spinous tubercles; a sublateral series of larger whitish tubercles with very short spines, the tubercles at each end being long, those at posterior end longest.

Cocoon purplish brown.

Hab. Dharmsála; Mhow; Nilgiris; Ceylon. *Exp.*, ♂ 12–20, ♀ 22 millim.

841. **Natada sericea,** *Hmpsn. Ill. Het.* ix, ined., pl. 161, fig. 15.

♂. Differs from *nararia* in being uniform silky ochreous white; fore wing with an indistinct darker submarginal line.

Hab. Pundaloya, Ceylon. *Exp.* 20 millim.

842. **Natada unicolor,** *Moore, Lep. E. I. Co.* p. 415, pl. 21, figs. 7, 7 *a* (larva).

♂. Uniform pale reddish brown; a fuscous spot on prothorax; metathorax and abdomen tipped with fuscous.

Larva green; a pale blue dorsal line; the lateral paired spinous processes on each somite yellow.

Hab. Calcutta. *Exp.* 24 millim.

SECT. III. Male with distal half of antennæ serrated.

843. **Natada ocellata,** *Moore, Lep. Atk.* p. 74; *C. & S.* no. 1324.

Head, thorax, and abdomen ochreous brown; some of the hairs on the vertex of thorax and abdomen black. Fore wing ochreous brown, irrorated with black, especially below the costa; a purplish-grey patch beyond the lower angle of cell with a deep red-brown mark beyond it; a fine submarginal black line. Hind wing suffused with fuscous.

Hab. Sikhim; Khásis; Nágas; Burma. *Exp.*, ♂ 40, ♀ 60 millim.

844. **Natada velutina,** *Koll. Hügel's Kaschmir*, iv, p. 473; *C. & S.* no. 1274; *Butl. Ill. Het.* vi, pl. 102, fig. 1.
Natada rugosa, *Wlk. Cat.* v, p. 1109.

Head, thorax, and abdomen dark red-brown. Fore wing dark silky red-brown; an oblique line, which is curved below the costa, from near the apex to inner margin near base, the scales on its inner side (especially below the costa and towards the inner margin) more erect, giving exactly the appearance of ruffled seal-skin; a curved submarginal line. Hind wing and underside paler. Fore tibia of male with a silvery-white spot.

Hab. Himalayas; Sind; Poona; Bengal; Cachar; Burma. *Exp.*, ♂ 60, ♀ 78 millim.

Genus TETRAPHLEPS, nov.

Type, *T. brevilinea*, Wlk.

Range. Sikhim; Nilgiris.

Antennæ of male bipectinated to tips. Palpi obliquely porrect, projecting beyond frontal tuft. Fore wing with veins 7, 8, 9, 10 stalked together. Hind wing with veins 6 and 7 on a short stalk.

SECT. I. Antennæ with the branches long; fore wing with the apex rounded.

845. **Tetraphleps brevilinea**, *Wlk. Cat.* xxxii, p. 475; *C. & S.* no. 1308.

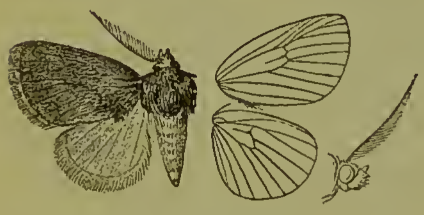

Fig. 260.
Tetraphleps brevilinea, ♂. 1/1.

Head, thorax, and base of abdomen dark brown, the remainder of abdomen pale ochreous brown. Fore wing dark red-brown; the basal area and costa slightly darker. Hind wing pale ochreous brown. Underside pale red-brown.

Hab. Sikhim. *Exp.*, ♂ 36, ♀ 40 millim.

SECT. II. Antennæ with the branches shorter; fore wing with the apex produced.

846. **Tetraphleps crispa**, *Swinh. P. Z. S.* 1889, p. 409, pl. 43, fig. 4.

♂. Head, thorax, and abdomen red-brown, suffused with fiery red above. Fore wing dark red-brown; a dark speck at end of cell; a purplish gloss forming an oblique line from apex to middle of inner margin; another along outer margin. Hind wing and underside dull brown. Silvery-white spots at end of coxa, femur, and tibia of fore leg.

Hab. Sikhim. *Exp.* 38 millim.

847. **Tetraphleps nilgirica**, *Hmpsn. Ill. Het.* viii, p. 63, pl. 142, fig. 13.

♂. Differs from *crispa* in the head, thorax, and abdomen being chestnut-brown. Fore wing with the purplish oblique line rather

dark; no marginal purplish shade; a chestnut submarginal nearly straight line.

Hab. Nilgiri plateau, 7000 feet. *Exp.* 38 millim.

Genus BIRTHAMA.

Birthama, *Wlk. Journ. Linn. Soc.* vi, p. 175 (1862).

Type, *B. obliqua*, Wlk., from Borneo.

Range. Ceylon; Burma; Borneo.

Antennæ bipectinated to two-thirds length in male, simple in female. Palpi reaching beyond frontal tuft. Hind tibia with a terminal pair of spurs in male, two pairs in female. Fore wing with vein 7 from angle of cell, 8, 9, 10 stalked. Hind wing with veins 6 and 7 from angle of cell.

848. **Birthama junctura**, *Wlk. Cat.* xxxiii, p. 857.

Head, thorax, and abdomen bright red-brown. Fore wing red-brown; the basal area darkest, and bounded by an oblique dark

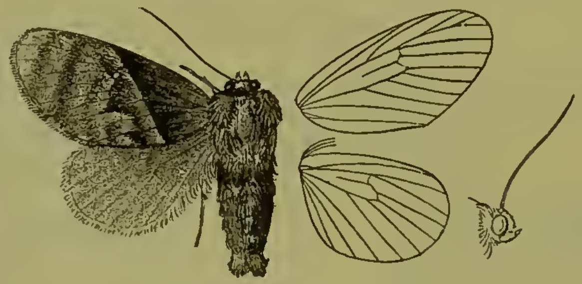

Fig. 261.—*Birthama junctura*, ♀. $\frac{1}{1}$.

medial line; outer area with two indistinct waved postmedial lines and two oblique lines across the apex. Hind wing paler.

Hab. Burma; Borneo. *Exp.*, ♂ 36, ♀ 48 millim.

849. **Birthama obliquifascia**, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 4.

♀. Head, thorax, and abdomen red-brown. Fore wing pale reddish brown, irrorated with black scales; a broad oblique black line from the costa before the apex to inner margin before the middle. Hind wing paler. Cilia of both wings red-brown.

Hab. Ceylon. *Exp.* 34 millim.

Genus CONTHEYLA.

Contheyla, *Wlk. Cat.* xxxii, p. 384 (1865).

Type, *C. vestita*, Wlk.

Range. N.W. Himalayas and Peninsular India.

Antennæ bipectinated to tip in male, ciliated in female. Palpi reaching beyond frontal tuft. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 on a long stalk. Hind tibia with a terminal pair of spurs in male, two pairs in female.

850. **Contheyla vestita,** *Wlk. Cat.* xxxii, p. 385; *C. & S.* no. 1279; *Hmpsn. Ill. Het.* viii, pl. 143, fig. 10.

♂. Head and thorax smoky black. Fore wing smoky black; a pale speck at end of cell; apical area grey, which colour is continued to outer angle as a series of conjoined marginal spots; a

Fig. 262.—*Contheyla vestita,* ♂. $\frac{1}{1}$.

large grey patch on inner margin near outer angle; base of cilia fulvous; the tips chequered brown and ochreous. Abdomen, hind wing, and underside ochreous, suffused with fuscous.

♀. The head, thorax, and fore wing paler and browner.

Hab. Nilgiri plateau, 6700 feet. *Exp.* 34 millim.

851. **Contheyla propexa,** *Swinh. P. Z. S.* 1889, p. 409.

♂. Head, thorax, abdomen, and fore wing very pale brown, irrorated with black scales. Fore wing with a black spot beyond the lower end of the cell; an elongated medial black mark from the median nervure to vein 1 *b*; a black oblique line from the apex to vein 5; a spot at outer angle. Hind wing dark fuscous.

Hab. Satara; Poona. *Exp.* 24 millim.

852. **Contheyla melanosticta,** n. sp.

♂. Head, thorax, and abdomen pale reddish ochreous; tegulæ smoky black. Fore wing ochreous, with a broad irregular smoky-black stripe below the cell from base to outer angle; a black spot beyond the cell; a black subapical patch with waved outer edge; a series of black marginal specks. Hind wing pale fuscous; the cilia ochreous.

♀. With the tegulæ ochreous. Fore wing with the black markings much reduced, especially the streak from the base, of which there is only scattered traces.

Hab. Jubbulpore; Mandi, N.W. Himalayas. *Exp.* 27 millim. Type, ♂ in coll. Moore, ♀ in coll. Elwes.

Genus MIRESA.

Miresa, *Wlk. Cat.* v, p. 1123 (1855).

Type, *M. albipuncta*, H.-S.

Range. Japan; China; throughout India and Ceylon.

Palpi not reaching beyond frontal tuft. Antennæ of male with the distal half serrated, mid and hind tibiæ with terminal pairs of spurs. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 on a short stalk or from cell.

SECT. I. Fore wing with vein 10 from end of cell.

853. **Miresa albipuncta**, *Herr.-Schäffer, Samml. aussereur. Schmett.* i, fig. 179; *C. & S.* no. 1305; *Forsayeth, Trans. Ent. Soc.* 1884, pl. 14, figs. 8 *a–c* (larva and pupa).
Miresa guttifera, *Wlk. Cat.* v, p. 1124; *C. & S.* no. 1312.

Head yellow; thorax fulvous yellow; abdomen ochreous fulvous. Fore wing red-brown; a silvery-white spot beyond the lower angle of cell; a faint silvery postmedial line. Hind wing

Fig. 263.—*Miresa albipuncta*, ♂. ½.

ochreous. Underside ochreous; both wings suffused with red-brown towards the costa.

The Burmese form has the thorax and fore wing rather darker.

Larva green; two pairs of dorsal and two of lateral spinous tubercles at anterior and posterior ends, the dorsal pairs longest; a lateral brown line, beneath which the colour is pale, with a series of brown spots; stigmata on a pale brown line.

Hab. Throughout India and Ceylon. *Exp.*, ♂ 32–43, ♀ 46 millim.

854. **Miresa inornata**, *Wlk. Cat.* v, p. 1125; *C. & S.* no. 1313.

Differs from *albipuncta* in the fore wing being duller red-brown; the white spot beyond the cell absent; an indistinct submarginal curved line. Hind wing darker.

Hab. Japan; China; N.W. Himalayas; Nágas. *Exp.*, ♂ 36, ♀ 50 millim.

855. **Miresa argentifera**, *Wlk. Cat.* v, p. 1124; *C. & S.* no. 1306; *Moore, Lep. Ceyl.* ii, pl. 129, figs. 1, 1 *a* (larva).

Differs from *albipuncta* in the spot beyond the cell of the fore wing being absent; a broken ill-defined postmedial silvery line, curved from the costa to vein 2, then straighter and more promi-

nent to inner margin; some silvery scales towards outer margin a series of silvery marginal spots.

Larva green; two pairs of dorsal and two of lateral spinous tubercles at anterior and posterior ends, the dorsal pair longest; intervening series of minute subdorsal and sublateral spinous tubercles; a pink stripe at base of the anterior and posterior tubercles; a pale dorsal line; spiracular rings pale.

Hab. Ceylon. *Exp.* 36 millim.

856. **Miresa bracteata,** *Butl. A. M. N. H.* (5) vi, p. 64; *id. Ill. Het.* vi, pl. 102, fig. 2; *C. & S.* no. 1307.

Differs from *argentifera* in the postmedial silvery line of the fore wing being bent inwards at vein 5 and expanding into a large triangular silvery spot beyond the lower angle of the cell; the marginal silvery spots larger.

Hab. Sikhim; Nágas. *Exp.,* ♂ 38, ♀ 41 millim.

SECT. II. Fore wing with vein 10 stalked with 7, 8, 9.

857. **Miresa decedens,** *Wlk. Cat.* v, p. 1125; *C. & S.* no. 1311; *Butl. Ill. Het.* vi, pl. 102, fig. 3.

Differs from *argentifera* in having the fore wing much darker brown instead of red-brown; the hind wing also darker.

Hab. Assam; Nilgiris. *Exp.* 36 millim.

858. **Miresa nivaha,** *Moore, Lep. E. I. Co.* p. 413; *C. & S.* no. 1315.

Differs from *decedens* in the head, thorax, and vertex of abdomen being dark red-brown instead of yellow.

Hab. Canara. *Exp.* 38 millim.

Genus PARASA.

Parasa, *Moore, Lep. E. I. Co.* p. 413 (1859).
Neæra, *Herr.-Schäffer, Samml. aussereur. Schmett.* i, fig. 176 (1854), nom. præocc.

Type, *P. lepida,* Cram.

Range. N. America; W. and S. Africa; Madagascar; Japan; China; throughout India, Ceylon, and Burma; Java.

Palpi projecting beyond frontal tuft. Fore wing rounded at apex, veins 7, 8, 9 stalked; the veinlet in cell forked or the lower discocellular absent, the fork of the veinlet replacing it. Hind wing with veins 6 and 7 on a short stalk or from cell. Hind tibia with a terminal pair of spurs.

SECT. I. Antennæ of male bipectinated, the distal half serrated.

859. **Parasa lepida,** *Cram. Pap. Exot.* ii, pl. 130 E; *C. & S.* no. 1286; *Moore, Lep. Ceyl.* ii, pl. 128, figs. 2, 2 *a, b* (larva and cocoon).
Neæra media, *Wlk. Cat.* v, p. 1140.
Limacodes graciosa, *Westw. Cab. Or. Ent.* p. 50.
Nyssia latifascia, *Wlk. Cat.* v. p. 1136; *C. & S.* no. 1317.

♂. Head green, red-brown at the sides; thorax green, with a brown stripe on the vertex; abdomen brown. Fore wing pea-green; a red-brown basal patch on the costa; the outer area red-brown, widest at inner margin. Hind wing yellowish at base, red-brown towards outer margin. Legs with the joints pale tipped.

Fig. 264.—*Parasa lepida*, ♂. 1/1.

♀. The red-brown stripe on thorax wider, and nearly the whole of the hind wing red-brown.

Larva pale green, whitish or bright yellowish green above; three dorsal mauve or green bands; subdorsal and sublateral series of short spinous tubercles, the spines of the anterior and posterior tubercles tipped with red.

Eggs flat and overlapping each other, and covered by a transparent cement.

Cocoon purple-brown.

Hab. Throughout India and Ceylon; Java. *Exp.* ♂, 30, ♀ 42–50 millim.

860. **Parasa repanda,** *Wlk. Cat.* v, p. 1141; *C. & S.* no. 1290; *Butl. Ill. Het.* vi, pl. 102, fig. 5.

♀. Differs from *lepida* in the basal brown patch of the fore wing being broader with an irregular lower edge; the marginal brown area narrower and even throughout, with a silvery-white line on its inner edge.

Hab. Sikhim; Assam. *Exp.* 52 millim.

861. **Parasa dharma,** *Moore, Lep. E. I. Co.* p. 414, pl. xi *a*, fig. 7.

Differs from *repanda* in the head being dark brown; tegulæ with only a small green spot. Fore wing with the green area confined to the disk and crescentic in shape, extending from near the base to near the apex; the marginal band suffused with silvery scales beyond the white line; a fine dark submarginal line. Hind wing with the basal two-thirds yellow, the brown marginal area more sharply defined.

Hab. Rangoon; Java. *Exp.*, ♂ 26, ♀ 34 millim.

862. **Parasa argentilinea**, n. sp.

♂. Differs from *repanda* in the brown basal patch of the fore wing being absent; an even brown band along inner margin; the silvery line starting from the costa nearer the apex, straight, and ending above inner margin, not recurved. Hind wing pale ochreous.

Hab. Sikhim; Margharita, Assam (*Doherty*). *Exp.* 24 millim. Type in coll. Elwes.

863. **Parasa hilaris**, *Westw. Cab. Or. Ent.* p. 50; *C. & S.* no. 1282.
Parasa læta, *Westw. Cab. Or. Ent.* p. 50; *C. & S.* no. 1284; *Moore, Lep. Ceyl.* ii. pl. 130, fig. 1.
Parasa hockingii, *Moore, P. Z. S.* 1888, p. 403.
Parasa mirza, *Swinh. Trans. Ent. Soc.* 1890, p. 192.

Differs from *lepida* in the thorax being without the brown stripe. Fore wing with the red-brown patch covering the whole basal area, its outer edge angled; the marginal band very variable in width, with an irregular inner edge. Hind wing with only a slight tinge of brown towards outer margin.

Hab. Throughout India and Ceylon. *Exp.*, ♂ 26, ♀ 30–34 millim.

864. **Parasa pastoralis**, *Butl. A. M. N. H.* (5) vi, p. 63; *id. Ill. Het.* vi. pl. 102, fig. 9; *C. & S.* no. 1288.

Differs from *hilaris* in the basal patch of the fore wing being suffused with ochreous; some red-brown suffusion beyond the patch; the marginal band suffused with yellow except the veins, its inner edge more curved.

P. consocia, Wlk. = *tessellata*, Moore, from Japan and China, only differs in being without the brown suffusion and the marginal band being narrower at outer angle.

Hab. Dharmsála; Sikhim; Bhutan; Nágas. *Exp.*, ♂ 40, ♀ 56 millim.

*865. **Parasa punica**, *Herr.-Schäffer, Samml. aussereur. Schmett.* i, fig. 177; *C. & S.* no. 1289.

♀. Differs from *hilaris* in having the basal patch of fore wing with a dentate outer edge; the marginal band very narrow with a dentate inner edge; in the figure a curved pale postmedial line is represented.

Hab. Sylhet. *Exp.* 40 millim.

*866. **Parasa similis**, *Feld. Reis. Nov.* pl. 82, fig. 15; *C. & S.* no. 1292.

♂. Differs from *hilaris* in the basal brown patch of the fore wing being restricted to a spot below the median nervure; the marginal brown band widest at middle.

Hab. Ceylon. *Exp.* 30 millim.

*867. **Parasa isabella**, *Moore, Lep. E. I. Co.* p. 415; *C. & S.* no. 1283.

♂. Head, thorax, and fore wing grass-green; the last with a large buff-coloured patch from the costa to lower angle of cell, suffused with brown and edged with black; a similarly-coloured marginal band expanding into large patches at apex and outer angle. Abdomen and hind wing ochreous brown.

Larva green, with a purple dorsal stripe and paired anterior red-brown spinous processes.

Hab. Bengal. *Exp.* 40 millim.

868. **Parasa bicolor**, *Wlk. Cat.* v, p. 1142; *C. & S.* no. 1281; *Butl. Ill. Het.* vi, pl. 102, fig. 11.

Head and thorax pea-green. Fore wing pea-green, the costa and cilia narrowly brown; a small brown speck near inner margin between veins 1 *b* and 1 *c*, and another between veins 4 and 5. These specks are sometimes edged inwardly with white and form a more or less complete series to the apex. Abdomen, hind wing, and underside ochreous fuscous.

Hab. Sikhim; throughout Continental India and Burma. *Exp.*, ♂ 35, ♀ 38 millim.

869. **Parasa viridis**, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 9.

♂. Differs from *bicolor* in being without the brown specks and in having a brown patch on the margin above outer angle and on inner margin before the angle. Thorax edged with fuscous.

Hab. Ceylon. *Exp.* 30 millim.

870. **Parasa albipuncta**, n. sp.

♂. Differs from *viridis* in the marginal brown band having expanded into a large patch between veins 3 and 5; a white speck on the patch on inner margin. Hind wing ochreous.

Hab. Mao, Manipur (*Doherty*). *Exp.* 26 millim. Type in coll. Elwes.

871. **Parasa herbifera**, *Wlk. Cat.* v, p. 1136; *C. & S.* no. 1316; *Butl. Ill. Het.* vi, pl. 102, fig. 6.

Parasa fumosa, *Swinh. P. Z. S.* 1889, p. 408, pl. 43, fig. 12.

Head and thorax pea-green. Fore wing with the basal two-thirds dark purplish brown in the male, dark reddish brown in the female; the outer marginal area a different shade of brown. Abdomen and hind wing dark brown.

Hab. Simla; Nepal; Nilgiris. *Exp.*, ♂ 30, ♀ 34 millim.

SECT. II. Male with antennæ serrated throughout.

872. **Parasa dentata**, n. sp.

Head and thorax pale brown; abdomen darker. Fore wing with the basal area pale brown, bounded by an antemedial curved black line, beyond which is a purplish-grey band, then a large discal brown patch, on which is a semicircular dark-outlined mark, its outer edge highly dentate; marginal area grey; a marginal black line most prominent at apex; cilia with two black lines. Hind wing fuscous, with marginal and cilial lines.

Hab. Sikhim (*Möller*); Nágas (*Doherty*). *Exp.*, ♂ 30, ♀ 44 millim. Type in coll. Elwes.

Genus SPATULIFIMBRIA.

Spatulicraspeda, *Hmpsn. Ill. Het.* ix, ined.

Type, *S. castaneiceps*, Hmpsn.
Range. Ceylon.

Antennæ bipectinated to three-fourths length in male, ciliated in female. Palpi slight and short. Hind tibia with two pairs of spurs. Fore wing with veins 7, 8, 9 stalked. Hind wing with vein 8 bent down and anastomosing with 7 near end of cell, 6 and 7 stalked.

873. **Spatulifimbria castaneiceps**, *Hmpsn. Ill. Het.* ix, ined., pl. 161, figs. 16, 17.

Fig. 265.
Spatulifimbria castaneiceps, ♂. $\frac{2}{1}$.

♂. Head and collar chestnut; thorax and abdomen black-brown. Fore wing black-brown; a dark band on discocellulars and another from costa before apex to outer margin above outer angle. Hind wing black-brown; cilia pale towards apex.

♀. Thorax and fore wing chestnut; the submarginal band reaching the inner margin. Hind wing smoky black; the cilia concolorous.

Cocoon round and streaked with brown and white.

Hab. Ceylon. *Exp.*, ♂ 17, ♀ 22 millim.

Genus IDONAUTON.

Idonauton, *Swinh. Cat. Het. Mus. Oxon.*, ined.

Type, *I. apicale*, Wlk.
Range. Sylhet; Singapore; Borneo.

Antennæ bipectinated to half the length in male, ciliated in female. Palpi upturned, reaching vertex of head. Tibiæ without spurs in male.

Fore wing with veins 7, 8, 9, 10 stalked together. Hind wing with veins 6 and 7 stalked.

874. **Idonauton apicale**, *Wlk. Cat.* v, p. 1150; *C. & S.* no. 1280.
Nyssia rubriplaga, *Wlk. Journ. Linn. Soc.* vi, p. 144.

Fig. 266.
Idonauton apicale, ♂. 1/1.

Head, thorax, and abdomen chestnut. Fore wing chestnut, with an oval marginal chocolate patch bounded on the inside by a white semicircular line. Hind wing paler.

Hab. Sylhet; Singapore; Borneo. *Exp.*, ♂ 25, ♀ 36 millim.

Genus CHALCOCELIS, nov.

Type, *C. fumifera*, Swinh.
Range. Burma; Singapore.

♂. Antennæ with proximal half bipectinated. Palpi reaching vertex of head. Hind tibia with two pairs of spurs. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 stalked.

875. **Chalcocelis fumifera**, *Swinh. Trans. Ent. Soc.* 1890, p. 195, pl. vi, fig. 13.

Fig. 267.
Chalcocelis fumifera, ♂. 1/1.

♂. Head, thorax, abdomen, and wings dark smoky brown. Fore wing with a patch below the middle of the cell, the inner part of which is bright coppery red, the outer dark brown with a conspicuous white dot in the middle of it.

Hab. Rangoon; Singapore. *Exp.* 22 millim.

Genus TRIPLOPHLEPS, nov.

Type, *T. inferma*, Swinh.
Range. Burma.

♂. Antennæ simple. Palpi reaching vertex of head. Hind tibia with one pair of spurs. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 stalked.

876. **Triplophleps inferma**, *Swinh. Trans. Ent. Soc.* 1890, p. 194.

Fig. 268.
Triplophleps inferma, ♂. 1/1.

♂. Head, thorax, abdomen, and wings greyish fuscous. Fore wing with a black antemedial curved line, not quite reaching either the costa or inner margin; a postmedial blackish curved line from the lower angle of cell to vein 1 *b*; an obliquely-curved line from the costa before the apex to above outer angle.

Hab. Rangoon. *Exp.* 22 millim.

Genus **ORTHOCRASPEDA**, nov.

Type, *O. trima*, Moore.

Range. Burma; Java.

♀. Antennæ simple. Palpi reaching vertex of head. Mid tarsi tufted with hair; hind tibiæ with one pair of spurs. Fore wing with veins 8 and 9 stalked; the outer margin straight and erect. Hind wing with veins 6 and 7 stalked.

877. **Orthocraspeda trima**, *Moore, Lep. E. I. Co.* p. 416, pl. xi *a*, figs. 13, 13 *a*, pl. 21, fig. 9 (larva).

Fig. 269.
Orthocraspeda trima, ♂. 1/1.

♀. Head, thorax, and abdomen pale brown. Fore wing pale brown, with four oblique black-brown lines, one subbasal from subcostal nervure to inner margin, a similar medial line, one postmedial from subcostal to vein 2, and one submarginal from the costa before apex to outer angle; a marginal dark line. Hind wing fuscous.

Larva: the first four somites brown; the posterior somites green, with a brown dorsal band expanding on the last somites, a yellow patch on each side of the narrow part; paired lateral spinous tubercles to each somite.

Hab. E. Pegu; Java. *Exp.* 20 millim.

Genus **CERATONEMA**, nov.

Type, *C. retractatum*, Wlk.

Range. Sikhim; Nága Hills.

♂. Antennæ simple. Palpi reaching vertex of head. Hind tibiæ with two pairs of spurs. Fore wing with veins 8, 9, 10 stalked. Hind wing with veins 6 and 7 from cell.

Sect. I. Palpi with 3rd joint of moderate length.

878. **Ceratonema albifusum**, n. sp.

♂. Head, thorax, and abdomen pale ochreous. Fore wing ochreous, suffused with whitish along inner and outer margins; a broken medial band of dark scales, prominent at costa, lower angle of cell, and inner margin; a submarginal series of dark specks. Hind wing whitish.

Hab. Nágas, 6000 feet (*Doherty*). *Exp.* 23 millim. Type in coll. Elwes.

879. **Ceratonema retractatum**, *Wlk. Cat.* xxxii, p. 487; *C. & S.* no. 1291.

Fig. 270.
Ceratonema retractatum, ♂. 1/1.

♂. Head, thorax, and abdomen ochreous. Fore wing ochreous, the veins darker; a dark oblique line from the costa before the middle to centre of inner margin; a fine waved postmedial line from vein 6 to inner margin; an oblique line from costa before apex to outer margin at vein 3. Hind wing pale yellow; an ochreous streak near anal angle.

Hab. Sikhim. *Exp.* 24 millim.

Sect. II. Palpi with 3rd joint minute.

880. **Ceratonema fasciatum**, n. sp.

♂. Head, thorax, and abdomen whitish; collar and extremity of abdomen fuscous. Fore wing silky white; an oblique dark band from costa just beyond middle to inner margin just before the middle; a dark speck beyond it on the costa and another on vein 1 *b*; two dark specks on outer margin below the apex. Hind wing yellowish white, with two dark specks on margin below the apex.

Hab. Nágas, 6000 feet (*Doherty*). *Exp.* 28 millim. Type in coll. Elwes.

Genus **ARÆOGYIA**, nov.

Type, *A. spatulata*, Hmpsn.

Range. Sikhim.

♂. Antennæ simple. Palpi upturned and long, reaching above vertex of head. Hind tibiæ with two pairs of spurs; legs naked. Fore wing with vein 7 from below angle of cell, 8 and 9 stalked. Hind wing with veins 6 and 7 from the cell.

881. **Aræogyia spatulata**, n. sp.

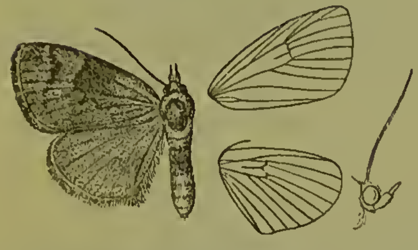

Fig. 271.
Aræogyia spatulata, ♂. $\frac{2}{1}$.

♂. Head and thorax purplish black; abdomen fuscous, darkest on middle segments. Fore wing black, irrorated with a few leaden scales; a patch of leaden scales on the costa before apex, and on inner margin before outer angle. Hind wing fuscous; cilia with a few spatulate scales, and a conspicuous patch of them at anal angle.

Hab. Sikhim (*Elwes*). *Exp.* 16 millim. Type in coll. Elwes.

882. **Aræogyia castanea**, n. sp.

♂. Head pale; thorax chestnut; abdomen pale, the middle segments darker. Fore wing chestnut; a large blackish patch beyond the cell from the costa to vein 3, darkest on the discocellulars, where there are a few white scales. Hind wing fuscous.

Hab. Sikhim (*Elwes*). *Exp.* 18 millim. Type in coll. Elwes.

Genus CANIA.

Cania, *Wlk. Cat.* v, p. 1177 (1855).

Type, *C. bilinea*, Wlk.

Range. China; throughout India and Burma; Malacca; Java.

Antennæ in male bipectinated to three-fourths length. Palpi slight and short. Fore wing with vein 11 curved and running along 12. Hind wing with veins 6 and 7 from the cell. Mid tibia with one pair of spurs, hind tibia with two pairs.

Sect. I. Fore wing with vein 7 from angle of cell, 10 from before the angle.

883. **Cania bilinea**, *Wlk. Cat.* v, p. 1142.
Cania sericea, *Wlk. Cat.* v, p. 1178; *C. & S.* no. 1321; *Butl. Ill. Het.* vi, pl. 102, fig. 7.
Miresa mollis, *Wlk. Cat.* xxxii, p. 475; *C. & S.* no. 1314.
Nyssia malaccana, *Wlk. Cat.* xxxii, p. 481.
Aspidiotus bicarinatus, *Wlk. Cat. Homopt. Suppl.* p. 306 (1858).

Fig. 272.—*Cania bilinea*, ♂. $\frac{1}{1}$.

♂. Head, thorax, and fore wing reddish ochreous, the head and collar rather darker. Fore wing with two oblique lines with pale outer edges from the costa before the apex to near centre of inner margin; cilia ochreous or brownish. Abdomen and hind wing ochreous.

♀. The lines of the fore wing indistinct and without the pale edges.

Hab. China; Dharmsála; Sikhim; Manipur; Ganjam; S. India; Malacca; Java. *Exp.* 34 millim.

884. **Cania bandura,** *Moore, Lep. E. I. Co.* p. 417, pl. xi *a*, fig. 9; *C. & S.* no. 1280 A.

♂. Head and collar fuscous; thorax and abdomen yellowish white. Fore wing silky black, with a yellowish-white basal patch; the costa and outer margin narrowly yellowish white. Hind wing yellowish white, with a slight fuscous suffusion.

Hab. Rangoon; Malacca; Java. *Exp.* 36 millim.

SECT. II. Fore wing with vein 7 stalked with 8 and 9, 10 from the angle.

885. **Cania pulligonis,** *Swinh. P. Z. S.* 1889, p. 408, pl. 43, figs. 7, 8.

♂. Head, thorax, and abdomen ochreous. Fore wing ochreous, the whole disk suffused with dark brown, red-brown, and grey scales; an indistinct oblique line from the costa before apex to centre of inner margin; a curved submarginal line starting from the same point on the costa as the postmedial line. Hind wing ochreous.

♀. Head, thorax, and fore wing uniform dark vinous brown. Fore wing with the two lines ochreous, the submarginal line more oblique and less curved. Hind wing darker than in male.

Hab. Canara. *Exp.*, ♂ 25, ♀ 28 millim.

Genus ALTHA.

Altha, *Wlk. Journ. Linn. Soc.* vi, p. 173 (1862).
Belgoræa, *Wlk. Cat.* xxxii, p. 496 (1865).

Type, *A. nivea*, Wlk.

Range. Throughout India, Ceylon, and Burma; Java; Borneo.

Palpi short and slight. Mid and hind tibiæ without spurs. Fore wing with vein 7 from the cell or stalked with 8 and 9. Hind wing with veins 6 and 7 from the cell.

SECT. I. Fore wing with vein 7 stalked with 8 and 9.

A. *Male with antennæ pectinated to the tips.*

886. **Altha castaneipars,** *Moore, P. Z. S.* 1865, p. 819; *C. & S.* no. 1309.

♂. Head, thorax, and wings yellowish white. Fore wing with a large chestnut subbasal irregular patch, with a blue-grey line

across the middle from the median nervure to lower edge; traces of two postmedial lines, with a costal black speck at their origin; a pale brown suffusion towards outer angle. Underside of fore wing suffused with black below the costa and median nervure. End of abdomen with some fulvous hairs.

Hab. Sikhim; Nágas. *Exp.* 40 millim.

B. *Male with distal half of antennæ serrated.*

887. **Altha nivea,** *Wlk. Journ. Linn. Soc.* vi, p. 173.
Candyba punctata, *Moore, Lep. Ceyl.* ii, pl. 132, fig. 4; *C. & S.* no. 1326 (*nec Wlk.*).
Belgoræa subnotata, *Wlk. Cat.* xxxii, p. 497.

Fig. 273.—*Altha nivea,* ♂. 1/1.

The wings broader and rounder. Pure white. Fore wing with a black dot beyond lower end of cell and two on outer margin below apex. Hind wing with two black dots on outer margin below apex. Underside with costa of fore wing black.

In a fresh specimen from Sikhim prominent olive markings appear on the fore wing as patches in and below the cell and forming an irregular postmedial band.

Candyba punctata, Wlk., is from Brazil, and the genus is distinct from *Altha.*

Hab. Simla; Kulu; Sikhim; Sibságar; Ranchi; Ganjam; S. India; Ceylon. *Exp.* 30 millim.

888. **Altha lacteola,** *Swinh. Trans. Ent. Soc.* 1890, p. 193.

♂. Differs from *nivea* in the fore wing being slightly blotched and streaked with orange in a similar manner to *adala,* but not nearly as much; no black spot beyond end of cell and only a trace of the subapical dark streak. Hind wing slightly suffused with ochreous except on costal and inner areas. Underside with the costa of fore wing white.

There is a single specimen from Ceylon in coll. Swinhoe of a form with the wings as much marked with red as in *Narosa conspersa.*

Hab. Rangoon; Ceylon. *Exp.* 24 millim.

SECT. II. Fore wing with vein 7 from the cell.

A. *Fore wing with vein* 10 *from before end of cell.*

889. **Altha adala,** *Moore, Lep. E. I. Co.* p. 418; *id. Lep. Ceyl.* ii, pl. 132, figs. 3, 3 *a* (larva); *C. & S.* no. 1318.

Head, thorax, abdomen, and fore wing brownish white. Fore wing

whitish, spotted and streaked with red-brown marks forming indistinct bands, the most prominent being a red-brown spot below middle of cell, two in the end of it, and one beyond; a black dot beyond lower angle of cell and two on margin below apex. Hind wing silvery white, with a dark dot on margin below apex.

Larva pale green, with indistinct dorsal and lateral rows of bluish-green dots and longitudinal lines and a sublateral row of white dots.

Cocoon oval and whitish.

Hab. Nágas; Nilgiris; Ceylon; Java. *Exp.* 28 millim.

890. **Altha rufotessellata,** *Moore, Lep. Atk.* p. 73, pl. 3, fig. 24; *C. & S.* no. 1320.

Differs from *adala* in the ground-colour of the fore wing being ochreous, more closely and evenly distributed; the broken brownish-orange bands of fore wing and spot at end of cell being more prominent. Hind wing bright orange. Underside orange, yellow towards outer margin.

Hab. Simla; Sikhim. *Exp.* 34 millim.

B. *Fore wing with vein* 10 *from end of cell.*

891. **Altha contaminata,** *Hmpsn. Ill. Het.* viii, p. 63, pl. 142, fig. 3.

Differs from *adala* in the ground-colour of the thorax and fore wing being whiter; fore wing with the markings more prominent. The abdomen, the whole of hind wing except costa, and underside suffused with black; hind wing with a marginal series of black dots.

Hab. Nilgiris, 6000–8000 feet. *Exp.* 28 millim.

Genus NAROSA.

Narosa, *Wlk. Cat.* v, p. 1151 (1855).

Type, *N. conspersa*, Wlk.

Range. Peninsular India and Ceylon; Nága Hills; Borneo; Java.

Antennæ ciliated in male, simple in female. Palpi reaching vertex of head. Mid tibia with one pair of spurs, hind tibia with two pairs. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 stalked.

892. **Narosa conspersa,** *Wlk. Cat.* v, p. 1151; *C. & S.* no. 1319; *Moore, Lep. Ceyl.* ii, pl. 132, figs. 2, 2 *a, b* (larva).
Narosa velutina, *Wlk. Journ. Linn. Soc.* vi, p. 171.

Head and thorax white, slightly spotted with red-brown. Fore wing yellowish white, spotted and streaked with red-brown marks, forming indistinct broken transverse oblique lines; a large ferru-

ginous patch near base of inner margin; two brown specks on outer margin above veins 2 and 3. Abdomen and hind wing pale yellow.

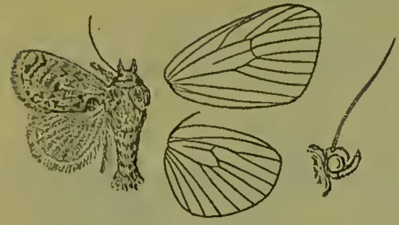

Fig. 274.
Narosa conspersa, ♂. $\frac{1}{1}$.

Larva naked, oval, and transversely corrugated; with paired dorsal humps; green, with white subdorsal lines and a series of white sublateral spots; legs yellow and retractile.

Cocoon oval; whitish, with a circular brown spot at one end.

Hab. Nágas; S. India; Ceylon; Borneo. *Exp.* 22 millim.

893. **Narosa dœnia**, *Moore, Lep. E. I. Co.* p. 416.

Head, thorax, and abdomen pale and dark brown. Fore wing pale brown, irrorated with fuscous; a diffused curved dark brown band from vein 2 near the outer margin curving up to and along the subcostal nervure, then down to inner margin before the middle; a marginal dark band, widest at apex; some dark apical specks. Hind wing silky fuscous; cilia paler.

Hab. Ganjam; Nágas; Java. *Exp.* 20 millim.

Genus BELIPPA.

Belippa, *Wlk. Cat.* xxxii, p. 508 (1865).
Cheromettia, *Moore, Lep. Ceyl.* ii, p. 133 (1883).

Type, *B. horrida*, Wlk., from China.

Range. China; Ceylon; Sikhim, Cachar, Manipur, and Burma; Java.

Antennæ with the proximal one-third bipectinated in male, ciliated in female. Palpi reaching vertex of head. Hind tibia with two pairs of spurs. Fore wing with veins 7, 8, 9 stalked. Hind wing with veins 6 and 7 from the cell.

Sect. I. Hind wing with outer margin rounded in male.

894. **Belippa laleana**, *Moore, Lep. E. I. Co.* p. 417; *C. & S.* no. 1285.
Cheromettia ferruginea, *Moore, A. M. N. H.* (4) xx, p. 348; *id. Lep. Ceyl.* ii, pl. 132, figs. 1, 1 *a, b* (larva); *C. & S.* no. 1322.

Head, thorax, abdomen, and fore wing fulvous, the last with a dark speck at end of cell; a small black patch with a few white scales on it at apex, where the tips of the cilia also are black. Hind wing paler and yellower, with small black marginal streaks at apex and anal angle.

Fig. 275.—*Belippa laleana*, ♂. $\frac{1}{1}$.

Larva naked, oval, and convex

above; pale bluish green, with several longitudinal rows of small yellow spots and a subdorsal row of black dots.

Cocoon round and whitish.

Hab. Sikhim; Ceylon; Rangoon; Bhamo. *Exp.*, ♂ 34, ♀ 42 millim.

895. **Belippa thoracica,** *Moore, Lep. Atk.* p. 74, pl. 3, fig. 7; *C. & S.* no. 1278.

♂. Head and thorax white; collar sometimes fringed with black; abdomen fuscous. Fore wing black-brown or dark olive-brown, more or less irrorated with white scales; a white spot at end of cell; two white spots on inner margin, which are sometimes obsolete; in the olive-brown specimens a blackish apical patch suffused with white is prominent and a pale line runs from its inner edge on the costa towards outer angle. Hind wing fuscous; the cilia blackish at apex.

Hab. Sikhim, 7000 feet. *Exp.* 32 millim.

SECT. II. Male with outer margin of hind wing straight.

896. **Belippa apicata,** *Moore, Lep. Atk.* p. 75; *C. & S.* no. 1323.

♂. Head and thorax chestnut; abdomen dark brown. Fore wing red-brown; the basal area rather darker and bounded by a slightly waved medial line; a dark spot at end of cell; an indistinct waved postmedial line from costa to outer angle; a black apical patch suffused with grey. Hind wing black-brown; the cilia ochreous.

Hab. Sikhim; Manipur. *Exp.* 30 millim.

897. **Belippa lohor,** *Moore, Lep. E. I. Co.* p. 430, pl. xiii *a*, fig. 3.

♂. Differs from *apicata* in the fore wing being rather narrower and having the area beyond the cell suffused with fuscous. Hind wing with a large triangular hyaline patch from the lower angle of cell to outer margin from below apex to vein 2.

Hab. Cachar; Java. *Exp.* 28 millim.

Genus **NAGODA.**

Nagoda, *Moore, Lep. Ceyl.* iii, p. 542 (1887).

Type, *N. nigricans,* Moore.

Range. Ceylon.

Antennæ with the proximal one-third bipectinated in male, ciliated in female. Palpi short and porrect. Fore wing with veins 7, 8, 9 stalked. Hind wing with vein 8 sending a spur to the costa; veins 6 and 7 from the cell. Hind tibia without spurs in male, with a terminal pair in female. End of abdomen and hind tarsi tufted with hair in male.

898. **Nagoda nigricans**, *Moore, Lep. Ceyl.* iii, p. 542, pl. 211, fig. 10 (♂); *Hmpsn. Ill. Het.* ix, pl. 161, fig. 1 (♀).

♂. Head pale; thorax and abdomen clothed with red-brown, dark brown, black, and grey scales. Fore wing hyaline; the base, inner margin, and apex broadly black; the costa, veins, and outer margin narrowly so. Hind wing hyaline; the costa and inner margin broadly black, the veins and outer margin narrowly black.

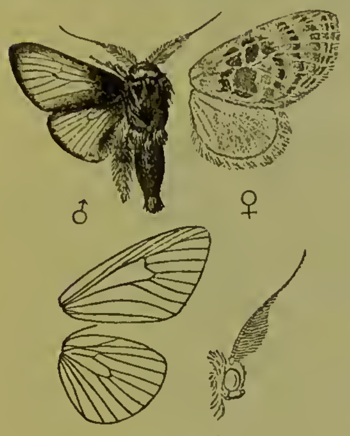

Fig. 276.
Nagoda nigricans. $\frac{1}{1}$.

♀ yellowish white. Fore wing with three bright ferruginous spots in cell, two below it, the outer one large; two small dark spots below the cell, and two below vein 1; a maculate dark band from veins 5 to 2; two dark maculate curved bands from the costa before apex to outer margin above outer angle.

Larva greenish blue, with dorsal and lateral darker stripes and series of lunular markings seen through the thick cuticle.

Cocoon rounded and greyish white.

Hab. Ceylon. *Exp.*, ♂ 30, ♀ 38 millim.

Genus MAHANTA.

Mahanta, *Moore, Lep. Atk.* p. 78 (1879).

Type, *M. quadrilinea*, Moore.
Range. Sikhim.

♂. Palpi upturned, reaching vertex of head. Antennæ with the branches very short. Hind tibia with a minute terminal pair of spurs. Fore wing elongate, the apex produced, the outer margin excised; veins 6, 7, 8, 9, 10 stalked together, 11 not curved. Hind wing subquadrate; the upper part of cell short; veins 6 and 7 on a long stalk; 8 almost touching 7 near the end of the cell; the veinlet in cell running obliquely to the median nervure.

899. **Mahanta quadrilinea**, *Moore, Lep. Atk.* p. 78, pl. 3, fig. 20; *C. & S.* no. 1478.

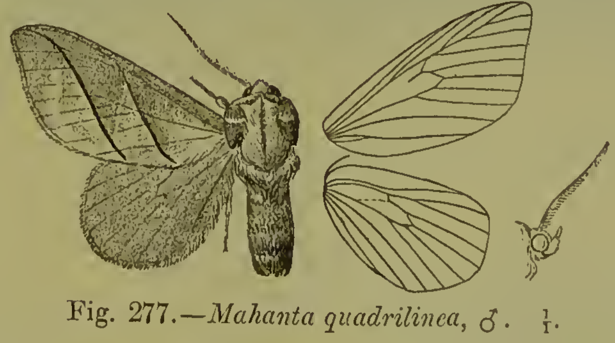
Fig. 277.—*Mahanta quadrilinea*, ♂. $\frac{1}{1}$.

♂. Head grey; palpi fulvous; collar and tegulæ fulvous, the

latter with a white bar across each; thorax grey, abdomen ochreous. Fore wing ochreous; an oblique medial dark line; a similar line from the apex to inner margin beyond the middle; inner area suffused with grey, which is diffused along the lines towards the costa and along outer margin towards apex; cilia fuscous. Hind wing uniform ochreous.

Hab. Sikhim. *Exp.* 52 millim.

Species formerly recorded as Indian which are omitted.

Aphendala conspersa, Butl. P. Z. S. 1880, p. 673 = *Miresa quadrinotata*, Moore, C. & S. no. 1315 A, is an *Acontid.*

Limacodes grisea, Hmpsn. Ill. Het. viii, p. 63, is an *Acontid.*

Proneca fola, Swinh. Trans. Ent. Soc. 1890, p. 194, pl. vi, fig. 8, is a *Hypogrammid.*

Rabila frontalis, Wlk., C. & S. no. 1300, is a *Leucanid.*

Natada basalis, Wlk., C. & S. no. 1272. Type lost; description unrecognizable.

Family LASIOCAMPIDÆ.

A family of moths mostly of large size. Palpi porrect and generally large; proboscis absent; eyes small; antennæ bipectinate in both sexes; legs generally with minute terminal pairs of spurs to mid and hind tibiæ and rather hairy. Fore wing with vein 1 *a* not forked with *b*; 1 *c* rarely present; the cell medial in position; veins 6 and 7 from the angle; veins 9 and 10 always stalked and from before the angle. Hind wing with two internal veins; 6 and 7 arising very near the base; 8 curved and almost touching 7 or connected with it by a bar, thus forming a precostal cell; accessory costal veinlets generally present. Frenulum absent.

Larva with lateral downwardly-directed tufts of hair, and often subdorsal tufts or dorsal humps on anterior somites thickly clothed with hair.

Cocoon closely woven of silk and hair.

Fig. 278.—Larva of *Suana concolor*. $\frac{1}{1}$.

Key to the Genera.

A. Hind wing with vein 8 running close along 7; no bar between them; few, or no, accessory costal veinlets.

a'. The cell of both wings closed.

a^2. Fore wing long and narrow, the apex produced.
  a^3. Fore wing with veins 8, 9, 10 stalked .... 1. BHIMA, p. 404.
  b^3. Fore wing with vein 8 not stalked with 9 and 10.
    a^4. Hind wing with veins 4 and 5 stalked .... 2. TARAGAMA, p. 404.
    b^4. Hind wing with veins 4 and 5 from angle of cell .... 3. SUANA, p. 406.
b^2. Fore wing broader.
  a^3. Hind wing with the costa excised.. 4. LEBEDA, p. 407.
  b^3. Hind wing with the costa highly arched near the base............ 10. CLISIOCAMPA, p. 417.
  c^3. Hind wing with the costa not excised and evenly rounded.
    a^4. Fore wing with veins 6 and 7 from the cell. Hind wing with veins 4 and 5 from the cell.
      a^5. Palpi long .... 6. ARGUDA, p. 412.
      b^5. Palpi short .... 13. TRICHIURA, p. 420.
    b^4. Fore wing with veins 6 and 7 stalked. Hind wing with veins 4 and 5 stalked or from the cell.
      a^5. Fore wing with the outer margin evenly rounded.
        a^6. Palpi long .... 5. METANASTRIA, [p. 408.
        b^6. Palpi short .... 9. CHILENA, p. 416.
      b^5. Fore wing with the outer margin angulate and excised .... 8. BHARETTA, p. 415.
    c^4. Fore wing with veins 6, 7, 8 stalked. Hind wing with veins 3, 4, 5 stalked .... 7. SYRASTRENA, p. 414.
    d^4. Fore wing with veins 7 and 8 stalked.
      a^5. Fore wing with vein 6 from the cell .... 12. KOSALA, p. 418.
      b^5. Fore wing with vein 6 stalked with 7 and 8 .... 11. ALOMPRA, p. 417.
b'. Hind wing with the cell open .... 14. CRINOCRASPEDA, [p. 420.
c'. Both wings with the cell open .... 15. TRABALA, p. 421.
B. Hind wing with vein 8 remote from 7; a bar connecting them and forming a large precostal cell with numerous accessory costal veinlets.
a'. Fore wing with the stalk of veins 9 and 10 short.
  a^2. Fore wing short, the apex rounded .. 16. LENODORA, p. 422.
  b^2. Fore wing longer, the apex produced. 18. ODONESTIS, p. 425.
b'. Fore wing with the stalk of veins 9 and 10 long.
  a^2. Hind wing with veins 4 and 5 from the cell .... 19. GASTROPACHA, [p. 428.
  b^2. Hind wing with veins 4 and 5 stalked .... 20. STENOPHYLLOIDES, [p. 429.
  c^2. Hind wing with veins 3, 4, 5 stalked. 17. ESTIGENA, p. 424.

Genus BHIMA.

Bhima, *Moore, P. Z. S.* 1888, p. 403.

Type, *B. undulosa*, Wlk.

Range. Himalayas; Khásis; Manipur.

Palpi slight and porrect. Antennæ with the branches becoming abruptly short at middle in male. Legs without spurs. Fore wing long and narrow; veins 6 and 7 from angle of cell; 8, 9, 10 stalked. Hind wing with veins 4 and 5 stalked; 8 almost touching 7; slight accessory costal veinlets.

900. **Bhima undulosa,** *Wlk. Cat.* vi, p. 1477; *C. & S.* no. 1509.

♂. Frons ochreous white; antennæ, head, thorax, and abdomen very dark red-brown. Both wings very dark red-brown, irrorated with ochreous scales; fore wing with two pale waved indistinct

Fig. 279.—*Bhima undulosa*, ♂. $\frac{1}{1}$.

antemedial lines; a white spot at end of cell; two oblique waved postmedial lines; a highly-dentate submarginal line; outer area pale; hind wing with the submarginal dentate line indistinct.

♀ with the frons red-brown; the abdomen with a very large pale terminal tuft; the wings more suffused with ochreous.

The Kangra female is much suffused with grey; the abdominal tuft is white; the markings of wings whitish; the hind wing crossed by two waved lines just beyond the middle.

Cocoon formed of brownish hairs.

Hab. Kangra; Nepal; Khásis; Manipur. *Exp.*, ♂ 52, ♀ 82–92 millim.

Genus TARAGAMA.

Taragama, *Moore, Lep. E. I. Co.* p. 427 (1859).

Type, *T. siva*, Lef.

Range. Spain; Bagdad; throughout India and Ceylon; Philippines; Borneo; Java.

Palpi broad and obliquely porrect. Antennæ with the branches becoming abruptly short at middle in male; short throughout in female. Legs without spurs. Fore wing long and narrow; veins 6, 7, 8 stalked; the stalk of 9 and 10 long. Hind wing with veins 4 and 5 stalked; 8 almost touching 7; slight accessory costal veinlets.

901. **Taragama dorsalis,** *Wlk. Cat.* xxxv, p. 1947.
Taragama castanoptera, *Moore, P. Z. S.* 1888, p. 404; *C. & S.* no. 1499 B.
Taragama igniflua, *Moore, Lep. Ceyl.* ii, p. 147, pl. 142, figs. 2, 2 *a*; *C. & S.* no. 1502.
Taragama hyperantheræ, *Moore, P. Z. S.* 1883, p. 18; *C. & S.* no. 1501.
Taragama intensa, *Moore, P. Z. S.* 1883, p. 18; *C. & S.* no. 1503.

♂. Antennæ fulvous; head, collar, and thorax greyish white; tegulæ deep red-brown; abdomen red-brown, each segment fringed with grey. Fore wing deep red-brown; a white spot at base; one on costa just beyond the middle forming part of an almost obsolete medial line; a waved postmedial oblique white

Fig. 280.—*Taragama dorsalis*, ♂. $\frac{1}{1}$.

line, obsolescent at middle; margins narrowly white. Hind wing deep red-brown, with a large white patch at anal angle; outer margin narrowly white.

♀. The pale fringe to abdominal segments broader; hind wing paler, with the pale patch produced across the wing as an indistinct band.

The Javan race is very pale in both sexes.

Hab. N.W. Himalayas; Calcutta; throughout S. India and Ceylon; Philippines; Borneo; Java. *Exp.*, ♂ 54, ♀ 80–102 millim.

902. **Taragama siva,** *Lef. Zool. Journ.* iii, p. 210.
Bombyx ganesa, *Lef. Zool. Journ.* iii, p. 211; *C. & S.* no. 1500; *Moore, Lep. E. I. Co.* ii, pl. 22, figs. 4, 4 *a* (larva).
Megasoma pallidum, *Wlk. Cat.* vi, p. 1450; *C. & S.* no. 1504.
Megasoma venustum, *Wlk. Cat.* vi, p. 1449.
Megasoma albicans, *Wlk. Cat.* vi, p. 1450.

♂. Differs from *dorsalis* in the tegulæ being ochreous red-brown; the abdomen white, sometimes slightly tinged with red-brown. Fore wing grey; a red-brown spot ringed with white at base; a yellow-brown subbasal patch; the white medial line distinct and angled inwards below the cell; a red-brown spot in the cell produced beyond the lower angle as a streak; a very irregular white

postmedial line. Hind wing white; a slight fuscous suffusion on outer area; a dark patch on outer margin near anal angle.

♀. Differs from *dorsalis* in the abdomen being almost wholly white; fore wing with a conspicuous white spot on the postmedial line (which is obsolescent except at costa) at veins 4 and 5; hind wing white, with a reddish tinge on outer area; the cilia red-brown near anal angle.

Larva pale ochreous brown; large dark dorsal patches of hair on 2nd and 3rd somites; small black spots on 4th to 9th; long lateral tufts of ochreous hair; subdorsal series of small hairy papillæ; paired larger dorsal papillæ on 10th and 11th somites.

Cocoon formed of pale hair.

Hab. Throughout N.W. and S. India. *Exp.*, ♂ 48, ♀ 66–84 millim.

Genus **SUANA**.

Suana, *Wlk. Cat.* vi, p. 1502 (1855).

Type, *S. concolor*, Wlk.

Range. Throughout India and Ceylon; Philippines; Java.

Palpi long and broad. Antennæ with branches gradually shortening to apex in male, extremely short throughout in female. Legs without spurs. Fore wing long and narrow; veins 6, 7, 8 stalked; the stalk of veins 9 and 10 long. Hind wing with the outer margin straight in the male; veins 4 and 5 stalked or from angle of cell; 8 almost touching 7; one slight accessory costal veinlet.

903. **Suana concolor**, *Wlk. Cat.* vi, p. 1463; *C. & S.* no. 1508.
Lebeda bimaculata, *Wlk. Cat.* vi, p. 1463; *C. & S.* no. 1506; *Moore, Lep. Ceyl.* ii, pl. 140, figs. 1, 1 *a*, *b* (larva).
Suana ampla, *Wlk. Cat.* vi, p. 1502; *C. & S.* no. 1505.
Suana cervina, *Moore, P. Z. S.* 1879, p. 410; *C. & S.* no. 1507.

♂. Head, thorax, and abdomen dark red-brown. Fore wing

Fig. 281.—*Suana concolor*, ♂. ½.

dark red-brown, the costa greyish; a more or less distinct yellowish

subbasal spot; a silvery-white spot at end of cell; two antemedial, a medial, and two postmedial dark waved lines; a submarginal lunulate line, with yellow marks more or less prominent in the undulations. Hind wing darker red-brown.

Some specimens lose the white spot and others are very dark.

♀. Much paler; the markings similar; fore wing with a small grey patch at base.

The form *ampla* = *concolor* has lost the white spot at end of cell of fore wing which is present in *bimaculata*; all the intergrades are represented.

Larva pale brown covered with numerous black striæ; 2nd and 3rd somites with raised dorsal humps covered with close black or dark brown hair; some specimens (or a younger stage ?) have small white-haired dorsal papillæ on 4th to 10th somites, each with a pair of red-brown papillæ in front and a pair of crimson papillæ on each side; 11th somite with a black dorsal tuft; lateral brown tufts on each somite; head longitudinally banded with black.

Hab. Throughout India and Ceylon; Philippines; Java. *Exp.*, ♂ 52–64, ♀ 106–146 millim.

Genus LEBEDA.

Lebeda, *Wlk. Cat.* vi, p. 1453 (1855).

Type, *L. nobilis*, Wlk.

Range. The Himalayas; Assam Hills; Sylhet.

Palpi long and broad. Antennæ with the branches gradually decreasing to apex in male, short throughout in female; mid and hind tibiæ with a minute terminal pair of spurs. Fore wing broad, the apex rounded; veins 6 and 7 stalked; the stalk of veins 9 and 10 short. Hind wing with the costa deeply excised; veins 4 and 5 from end of cell; 8 nearly touching 7; slight accessory costal veinlets.

904. **Lebeda nobilis**, *Wlk. Cat.* vi, p. 1456; *C. & S.* no. 1465; *Butl. Ill. Het.* v, pl. 100, figs. 5, 6.

♂. Head and thorax pale red-brown; palpi black at sides and below; abdomen redder brown. Fore wing pale brown; two oblique antemedial pale lines, which nearly meet on the inner margin; a white spot at end of cell; two postmedial pale curved lines; a dark streak from the middle of cell to outer area, where it expands into a large marginal patch; a very indistinct lunulate submarginal line with two dark spots on it near the outer angle. Hind wing red-brown, with two pale curved postmedial lines. Underside: the basal area of both wings red-brown; the outer area pale, with two postmedial lines.

♀. More uniform red-brown varying to grey-brown; fore wing with the postmedial lines straighter and without the dark streak.

The distance between the lines on the inner margin of the fore wing varies much.

Fig. 282.—*Lebeda nobilis*, ♂. 1/1.

Hab. N.W. and E. Himalayas; Sylhet; Nágas. *Exp.*, ♂ 96–120, ♀ 138–148 millim.

Genus **METANASTRIA.**

Metanastria, *Hübn. Verz.* p. 186 (1818).
Eutricha, *Hubn. Verz.* p. 188 (1818).
Œona, *Wlk. Cat.* vi, p. 1417 (1855).
Chatra, *Moore, Lep. Atk.* p. 80 (1879).

Type, *M. hyrtaca*, Cram.

Range. Europe; Japan; China; S. Africa; throughout India, Ceylon, and Burma; Java; Borneo.

Palpi long and broad. Antennæ with the branches gradually decreasing to apex in male, short throughout in female. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing broad; vein 1 *c* present; 6 and 7, or 6, 7, 8, stalked; the stalk of veins 9 and 10 long. Hind wing with veins 4 and 5 stalked or from cell; 8 almost touching 7; slight accessory costal veinlets.

Sect. I. Fore wing with vein 8 from the angle of cell in both sexes.

A. *Hind wing with veins 4 and 5 stalked.*

905. **Metanastria aconyta**, *Cram. Pap. Exot.* ii, pl. 131 A; *C. & S.* no. 1457.
Lebeda opponens, *Wlk. Cat.* vi, p. 1462; *C. & S.* no. 1466.
Bombyx quadricincta, *Fabr. Mant. Ins.* ii, p. 111.
Lasiocampa trifascia, *Wlk. Cat.* vi, p. 1439.
Lasiocampa substrigosa, *Wlk. Cat.* vi, p. 1441.
Lasiocampa subparallela, *Wlk. Cat.* xxxii, p. 562; *C. & S.* no. 1490.

♂. Pale reddish brown. Fore wing with two antemedial lines

approaching each other at inner margin; two postmedial nearly parallel lines; an indistinct lunulate submarginal line with two small dark spots on it near outer angle, either or both of which may be absent; the nervules pale; the outer margin of both wings fuscous. Underside of fore and hind wings crossed by two indistinct lines.

♀. Fore wing with the lines not so parallel and more curved.

Hab. Sikhim; Canara. *Exp.*, ♂ 48–60, ♀ 92 millim.

906. **Metanastria nanda,** *Moore, Lep. E. I. Co.* p. 423, pl. xii *a*, fig. 3; *C. & S.* no. 1464.

♂. Differs from *aconyta* in the inner of the two postmedial lines of the fore wing being curved and approaching the antemedial line at inner margin; the dark spots near outer angle large; the nervules not pale; hind wing with the basal inner area clothed with red hair.

This may be a variety of *aconyta*.

Hab. Sikhim. *Exp.* 64 millim.

907. **Metanastria latipennis,** *Wlk. Cat.* vi, p. 1457; *Butl. Ill. Het.* v, pl. 99, figs. 1, 2.

Lebeda variegata, *Moore, A. M. N. H.* (4) xx, p. 347; *C. & S.* no. 1473.

Lebeda vulpina, *Moore, Lep. Atk.* p. 81; *C. & S.* no. 1475.

Lebeda placida, *Moore, Lep. Atk.* p. 80; *C. & S.* no. 1467.

Lebeda fasciata, *Moore, Trans. Ent. Soc.* 1884, p. 375; *C. & S.* no. 1459.

Chatra grisea, *Moore, Lep. Atk.* p. 80; *C. & S.* p. 1479.

Eutricha cheela, *Moore, P. Z. S.* 1879, p. 408; *C. & S.* no. 1486.

Dark brown, dark red-brown, or grey-brown. Fore wing sometimes with a chestnut patch near the base; a white speck at end of cell; indistinct curved antemedial, medial, and two postmedial lines, the last waved; a series of grey and black submarginal lunules expanding into a large spot on inner margin, each lunule with a faint chestnut spot inside it, most prominent in the brown specimens.

In the Ceylon form *variegata* the head and thorax are rather greyer; the abdomen and hind wings browner.

Hab. Sikhim; Calcutta; Ceylon; Burma; Borneo. *Exp.*, ♂ 78–88, ♀ 126 millim.

908. **Metanastria fulgens,** *Moore, Lep. Atk.* p. 81; *C. & S.* no. 1460.

♂. Differs from *latipennis* in being much darker red-brown. Fore wing with a large yellowish patch at outer angle; the lines black; three indistinct irregular antemedial lines and three highly-waved postmedial lines, the outer line coalescing at middle with the submarginal spots, which are dark. Hind wing with traces of three dark lines.

♀. Paler.

Hab. Sikhim. *Exp.*, ♂ 78, ♀ 106 millim.

909. **Metanastria lidderdalii**, *Butl. Ill. Het.* v, p. 73, pl. 100, figs. 1, 2; *C. & S.* no. 1461.
Lebeda stigmata, *Butl. Ill. Het.* v, p. 73; *C. & S.* no. 1471.

♂. Uniform dark red-brown. Fore wing with a white spot at end of cell; three dark postmedial curved lines; a series of dark submarginal spots between the veins.

♀. Without the white spot at end of cell of fore wing.

In the form *stigmata* the first line of the fore wing is nearer the end of the cell, and in the female there is a white spot present at end of cell.

Hab. Sikhim; Bhutan. *Exp.*, ♂ 98–108, ♀ 146 millim.

910. **Metanastria ampla**, *Wlk. Cat.* vi, p. 1412; *C. & S.* no. 1491.
Lebeda ferruginea, *Wlk. Cat.* vi, p. 1458.

♂. Differs from *lidderdalii* in the white spot at end of cell of fore wing being usually reduced to a speck; the three postmedial lines waved; the submarginal spots nearer the margin.

♀. Paler or more dusky; fore wing with a dark antemedial line; hind wing with traces of three dusky bands.

Hab. Sikhim; Sylhet; Burma; Java; Philippines. *Exp.*, ♂ 98, ♀ 140–150 millim.

B. *Hind wing with veins* 4 *and* 5 *from angle of cell.*

911. **Metanastria undans**, *Wlk. Cat.* vi, p. 1458; *C. & S.* no. 1472.
Odonestis excellens, *Butl. Ill. Het.* ii, p. 19, pl. xxvi, figs. 4, 5.

♂. Head, thorax, and abdomen ochreous red-brown. Fore wing ochreous red-brown, darkest at base and outer area; two antemedial waved lines; three waved postmedial lines, the two outer ones approaching each other at inner margin. Hind wing uniform ochreous red-brown.

Hab. Japan; Sylhet. *Exp.* 85 millim.

SECT. II. Fore wing with vein 8 stalked with 6 and 7 in the male. Hind wing with veins 4 and 5 stalked.

912. **Metanastria hyrtaca**, *Cram. Pap. Exot.* iii, pl. 249 F.
Lebeda lusca, *Fabr. Mant. Ins.* ii, p. 112; *C. & S.* no. 1463.
Bombyx buddha, *Lef. Zool. Journ.* iii, p. 209; *C. & S.* no. 1458: *Moore, Lep. E. I. Co.* pl. 12 *a*, figs. 2, 2 *a*; *Forsayeth, Trans. Ent. Soc.* 1884, pl. xv, figs. 3, 3 *a*, *b* (larva).
Bombyx brahma, *Lef. Zool. Journ.* iii, p. 208.
Lebeda plagiata, *Wlk. Cat.* vi, p. 1464.
Lasiocampa bhira, *Moore, P. Z. S.* 1879, p. 410, pl. 34, fig. 2; *C. & S.* no. 1488.

♂. Pale or dark red-brown; palpi black below. Fore wing with two antemedial pale lines and two postmedial angulated lines, with an almost black patch between the upper part of the ante- and post-

medial lines crossed by the pale veins and with a white lunule on it; a lunulate submarginal line. Underside of hind wing with two pale lines.

♀. Fore wing with the two antemedial and two postmedial lines much more distinct and without the dark patch and white lunule; the submarginal lunulate line very indistinct. Hind wing with an indistinct pale line.

Fig. 283.—*Metanastria hyrtaca*, ♂. 1/1.

Larva dark grey; a narrow crimson dorsal line across second somite behind a tuft of short dense hair; lateral tufts of whitish-brown hair; 3rd to 10th somites with dorsal oval brown velvety patches, each with four blue papillæ armed with long hairs.

Hab. E. Himalayas; Assam; Bombay; Mhow; Ganjam; Madras; Ceylon. *Exp.*, ♂ 48, ♀ 74 millim.

913. **Metanastria repanda**, *Wlk. Cat.* vi, p. 1460; *C. & S.* no. 1470; *Butl. Ill. Het.* vi, pl. 101, figs. 1, 2.

♂. Differs from *hyrtaca* in being darker brown; the black patch of fore wing narrower, with the white lunule on its inner edge; the submarginal lunulate line more distinct.

♀. Fore wing with the antemedial lines more erect; the inner postmedial line more angled below the costa; a series of dark spots on the lunulate line.

This may be a variety of *hyrtaca*.

Hab. Nepal; Assam; Bassein. *Exp.*, ♂ 50, ♀ 90 millim.

Sect. III. Fore wing with vein 8 stalked with 6 and 7 in both sexes.

914. **Metanastria recta**, *Wlk. Cat.* vi, p. 1461; *C. & S.* no. 1469.

♀. Grey-brown, without any red tinge; fore wing with the two antemedial and two postmedial lines almost straight and parallel, not curved or angled; the submarginal line dark and distinct. Hind wing without trace of the pale line on upperside.

This may be a variety of *repanda*.

Hab. N. India. *Exp.* 70 millim.

915. **Metanastria obliquifascia,** *Swinh. Cat. Het. Mus. Oxon.* p. 263.

♂. Very dark red-brown; head and thorax suffused with purplish. Fore wing with an indistinct dark line from the base curving up to the costa beyond the middle; an oblique line from near the apex to middle of inner margin, with an irregular series of pale spots beyond it; the area between the line and spots purplish. Hind wing paler red-brown.

Hab. Sikhim. *Exp.* 50 millim.

Genus **ARGUDA.**

Arguda, *Moore, Lep. Atk.* p. 79 (1879).
Radhica, *Moore, Lep. Atk.* p. 79 (1879).

Type, *A. decurtata*, Moore.

Range. Himalayas; Nilgiris; Ceylon; Burma; Philippines; Amoy; Singapore; Australia; Tasmania.

Palpi very long; antennæ with branches gradually decreasing to apex. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing broad, the outer margin rather erect; veins 6 and 7 from angle of cell; the stalk of veins 9 and 10 short. Hind wing with veins 4 and 5 from cell; 8 almost touching 7; slight accessory costal veinlets.

Sect. I. (*Radhica*). Palpi with 3rd joint heavily fringed with hair. Fore wing with outer margin irregularly waved.

916. **Arguda flavovittata,** *Moore, Lep. Atk.* p. 79; *C. & S.* no. 1477.

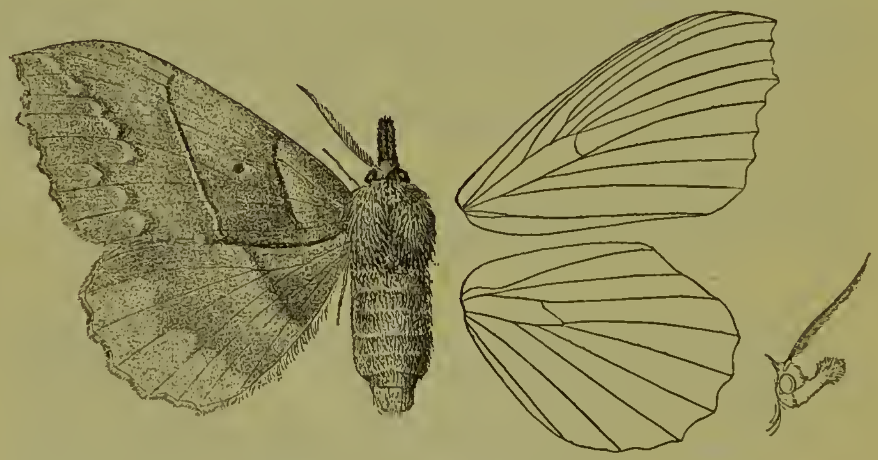

Fig. 284.—*Arguda flavovittata*, ♀. 1/1.

♀. Palpi blackish; head, thorax, and abdomen brownish ochreous; a dark stripe on head and thorax, ending in a grey spot. Wings brownish ochreous; a slightly irregular antemedial dark line; a black speck at end of cell; a nearly straight postmedial line,

inwardly dark, outwardly ochreous; a submarginal series of ochreous lunules inwardly defined with fuscous, the one between veins 3 and 4 displaced towards the margin. Hind wing with straight dark antemedial and irregular lunulate submarginal lines. Cilia of both wings dark. Underside of hind wing with a prominent waved antemedial line.

Hab. Dharmsála; Naini Tal; Bhutan. *Exp.* 80 millim.

SECT. II. Palpi with the 3rd joint not thickly fringed with hair. Fore wing with outer margin nearly straight.

917. **Arguda bheroba,** *Moore, Lep. E. I. Co.* p. 424, pl. xii *a,* fig. 5; *C. & S.* no. 1492.

♂. Head, thorax, and abdomen pale red-brown; wings rather darker red-brown; fore wing with a curved antemedial dark line; a very prominent white spot at end of cell; a nearly straight and slightly oblique dark postmedial line; outer margin suffused with grey. Underside: fore wing with a dark postmedial line; hind wing with a large dark patch extending from the middle of costa to lower angle of cell, with an indistinct line from it to inner margin; traces of a dark postmedial line.

Hab. Sikhim; Ceylon; Singapore; Amoy; Philippines. *Exp.* 68 millim.

918. **Arguda rosea,** *Hmpsn. Ill. Het.* viii, p. 65, pl. 144, fig. 18.

♂. Palpi black; head and thorax pale reddish brown, with a dark stripe on vertex; abdomen black, the terminal segment clothed with red hair. Wings pale red-brown; fore wing with the basal and outer areas tinged with pink; nearly straight oblique antemedial and medial lines; a waved postmedial line, curved at veins 3 and 4; a dark speck at end of cell. Hind wing suffused with pink, except on costa. Underside: fore wing suffused with fuscous below the apex, hind wing on base and outer areas, with grey on medial area; waved indistinct dark antemedial and medial lines.

Hab. Nilgiris, 6000 feet. *Exp.* 100 millim.

SECT. III. (*Arguda*). Male with the branches of antennæ much longer.

919. **Arguda vinata,** *Moore, P. Z. S.* 1865, p. 820; *C. & S.* no. 1474.

Differs from *rosea* in the colour being much paler grey-brown; the abdomen grey-brown, red-brown above. Fore wing with the antemedial and medial lines more distinct, oblique, and inwardly edged with grey; the postmedial waved line straighter. Hind wing pale grey-brown, the base and inner margin suffused with red-brown; an indistinct curved postmedial line. Under-

side: fore wing red-brown, with a pale suffusion beyond the medial and postmedial lines. Hind wing suffused with brown; three indistinct waved pale bands.

Hab. Sikhim. *Exp.*, ♂ 70, ♀ 86 millim.

920. **Arguda rectilinea,** n. sp.

♂. Differs from *vinata* in the palpi being pale; thorax with a narrow dark streak on vertex; abdomen not suffused with ferruginous. Fore wing with the ante- and postmedial lines dark, indistinct, and less oblique; the black speck at end of cell more prominent; the waved submarginal line very indistinct. Hind wing vinous red-brown, with an indistinct dark medial line which is waved on the underside; no pale bands below.

Hab. Bassein, Burma. *Exp.* 43 millim. Type in coll. Elwes.

921. **Arguda decurtata,** *Moore, Lep. Atk.* p. 79; *C. & S.* no. 1476.

♂. Differs from *rosea* in the colour being browner; the abdomen pale red-brown; the antemedial line more oblique; the medial line double, the space between it and the postmedial line usually darker than the ground-colour; the postmedial line outwardly edged with grey. Underside: fore wing with two indistinct postmedial lines, the outer margin suffused with grey; hind wing with a dark waved antemedial line; a curved grey medial band; a lunulate grey postmedial line; outer margin suffused with grey; dark lunules on the margin.

♀. Paler.

Hab. Sikhim. *Exp.*, ♂ 52, ♀ 68 millim.

922. **Arguda albigutta,** *Wlk. Cat.* vi, p. 1419.

♂. Palpi red-brown at sides, white above; head ochreous: branches of antennæ black; thorax and abdomen bright red-brown; abdominal tuft grizzled. Fore wing bright red-brown, the outer area suffused with grey; a large white spot at end of cell; curved antemedial and postmedial fine pale lines; an irregular submarginal series of indistinct black spots. Hind wing red-brown, with a yellow tinge.

♀. Paler; the palpi white or dark grey above; fore wing with the white spot absent.

Hab. Subáthu, N.W. Himalayas; Australia; Tasmania. *Exp.* 51 millim.

Genus SYRASTRENA.

Syrastrena, *Moore, Trans. Ent. Soc.* 1884, p. 373.

Type, *S. minor*, Moore.

Range. Sikhim.

Palpi very long and broad. Antennæ with the branches decreasing to apex. Mid and hind tibiæ with minute terminal

pairs of spurs. Fore wing with veins 6, 7, 8 stalked; the stalk of veins 9 and 10 long. Hind wing with veins 3, 4, 5 stalked; 8 nearly touching 7; one accessory costal veinlet.

923. **Syrastrena minor**, *Moore, Lep. Atk.* p. 78; *C. & S.* no. 1439.

♂. Pale reddish brown; fore wing slightly irrorated with grey scales; medial and postmedial nearly straight oblique pale lines.

Hab. Sikhim. *Exp.* 40–46 millim.

Fig. 285.—*Syrastrena minor*, ♂. $\frac{1}{1}$.

Genus BHARETTA.

Bharetta, *Moore, P. Z. S.* 1865, p. 820.

Type, *B. cinnamomea*, Moore.

Range. Sikhim; Manipur.

Palpi long. Antennæ with the branches rather short. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing with the apex acute; the outer margin angled at vein 6; veins 6 and 7 stalked; the stalk of veins 9 and 10 long. Hind wing with veins 4 and 5 stalked; 8 nearly touching 7; one prominent accessory costal veinlet.

Sect. I. Hind wing with the apex and outer margin evenly rounded.

924. **Bharetta cinnamomea**, *Moore, P. Z. S.* 1865, p. 820, pl. 43, fig. 6; *C. & S.* no. 1327.

Fig. 286.—*Bharetta cinnamomea*, ♂. $\frac{1}{1}$.

♂. Palpi and antennæ dark red-brown; head, thorax, and abdomen pale ochreous brown; thorax with a dark stripe on the

vertex, continued in a less defined way on the proximal segments of abdomen. Fore wing pale ochreous brown, irrorated with fuscous scales; a dark speck at end of cell; an oblique line from apex to near base of inner margin, which is ochreous inwardly, red-brown outwardly; the margins narrowly red-brown. Hind wing pale ochreous brown; an indistinct line from apex to near centre of inner margin. Underside of hind wing with an oblique ochreous line from apex.

Hab. Sikhim. *Exp.* 54 millim.

SECT. II. Hind wing with the apex and outer margin excised.

925. **Bharetta flammans**, n. sp.

♂. Bright brick-red. Fore wing with the margins dark; straight oblique ante- and postmedial dark lines, which approach each other towards inner margin; traces of a submarginal lunulate line; cilia tipped with white on each side of the angle. Hind wing with the apical excised part of the outer margin crenulate and the cilia white-tipped; the apex purplish grey; traces of a medial line.

Hab. Manipur, 6000 feet (*Doherty*). *Exp.* 40 millim. Type in coll. Elwes.

Genus CHILENA.

Chilena, *Wlk. Cat.* v, p. 1070 (1855).

Type, *C. similis*, Wlk.

Range. Nepal; Punjab; Central India; Ceylon.

Palpi short and slight. Antennæ with the branches of nearly equal length in both sexes. Abdomen tufted at extremity in male. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing broad, the outer margin oblique; veins 6 and 7 stalked; the stalk of veins 9 and 10 rather long. Hind wing with veins 4 and 5 stalked; 8 almost touching 7; slight accessory costal veinlets.

926. **Chilena similis**, *Wlk. Cat.* v, p. 1071; *C. & S.* no. 1334.

Head, thorax, and abdomen pale brownish white. Fore wing very pale brown, suffused with fuscous; an oblique white streak on the discocellulars with a faint fuscous line from it to base of inner margin; two oblique fuscous postmedial lines from near apex to inner margin. Hind wing pale brownish white.

Fig. 287.
Chilena similis, ♂. $\frac{1}{1}$.

Hab. Nepal; Punjab. *Exp.*, ♂ 38, ♀ 38–40 millim.

927. **Chilena strigula**, *Wlk. Cat.* xxxii, p. 563; *C. & S.* no. 1335; *Forsayeth, Trans. Ent. Soc.* 1884, pl. 14, figs. 6, 6 *a*, *b* (larva).

Differs from *similis* in having the abdomen and hind wings pure white.

Larva black and yellow; a lateral tuft of long black hair tipped with white on each segment; short black and orange hair on the dorsum; dorsal tufts of long hair on the 2nd and 3rd somites and one on terminal somite.

Cocoon formed of strong silk attached by long threads at each end to a twig; the lower end open.

Hab. Mhow; Campbellpur; Ceylon. *Exp.*, ♂ 34, ♀ 50 millim.

Genus CLISIOCAMPA.

Clisiocampa, *Steph. Ill. Brit. Ent., Haust.* ii, p. 48 (1829).

Type, *C. castrensis*, Linn., from Europe.

Range. N. America; Europe; Japan; N.W. Himalayas.

Palpi long and porrect. Antennæ with the branches long. Mid and hind tibiæ without spurs. Fore wing with veins 6 and 7 stalked; 8 from angle of cell. Hind wing with the costa highly arched near the base; veins 4 and 5 stalked, the discocellulars slender; no accessory costal veinlets.

928. **Clisiocampa indica**, *Wlk. Cat.* vi, p. 1489; *C. & S.* no. 1333.

♂. Head, thorax, and abdomen pale red-brown. Fore wing

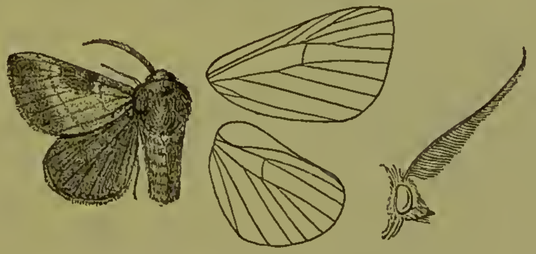

Fig. 288.—*Clisiocampa indica*, ♂. $\frac{1}{1}$.

greyish, with red-brown patches at base and centre of costal area; the outer area red-brown; ante- and postmedial oblique lines. Hind wing uniform red-brown.

Hab. Dehra Dún; Simla. *Exp.* 34 millim.

Genus ALOMPRA.

Alompra, *Moore, P. Z. S.* 1872, p. 579.

Type, *A. ferruginea*, Moore.

Range. Sikhim.

Palpi slight and porrect. Antennæ with the branches long. Mid and hind tibiæ with the spurs very minute. Fore wing broad

and elongate; vein 6 stalked with 7 and 8: the stalk of veins 9 and 10 long. Hind wing with veins 4 and 5 stalked; 8 nearly touching 7; two prominent accessory costal veinlets.

929. **Alompra ferruginea**, *Moore, P. Z. S.* 1872, p. 580, pl. 33, fig. 8; *C. & S.* no. 1337.

Bright ferruginous red; fore wing duller in colour except the

Fig. 289.—*Alompra ferruginea*, ♂. $\frac{1}{1}$.

basal area and an indistinct submarginal line; a black speck at base and a curved subbasal maculate black line.

Hab. Sikhim. *Exp.*, ♂ 66, ♀ 90 millim.

Genus KOSALA.

Kosala, *Moore, P. Z. S.* 1879, p. 407.

Type, *K. sanguinea*, Moore.

Range. Sikhim; Khásis; Nágas; Burma.

Palpi long and broad; antennæ with the branches of moderate length; mid and hind tibiæ with minute terminal pairs of spurs. Fore wing broad and rounded; vein 6 not stalked with 7 and 8; the stalk of veins 9 and 10 short. Hind wing with veins 4 and 5 stalked; 8 almost touching 7; slight accessory costal veinlets.

Sect. I. Hind wing with the outer margin angulate at vein 7, the costa arched.

930. **Kosala sanguinea**, *Moore, P. Z. S.* 1879, p. 408, pl. 33, fig. 8; *C. & S.* no. 1485.

♀. Head and thorax fiery red; abdomen brown. Fore wing fiery red, with antemedial and medial dark slightly curved lines; a submarginal series of indistinct lunulate marks; apex speckled with grey; a pale spot on the discocellulars. Hind wing brown; the costal area red with traces of a medial line. Underside brown; both wings with a curved postmedial dark line.

Hab. Sikhim; Khásis. *Exp.* 60 millim.

931. **Kosala modulata,** *Swinh. Trans. Ent. Soc.* 1890, p. 197, pl. vi, fig. 18.

♂. Ochreous red-brown; antennæ and tips of palpi rather

Fig. 290.—*Kosala modulata*, ♂. ½.

darker. Fore wing with a dark spot at end of cell; a curved dark line just beyond the middle; the outer area rather darker. Hind wing with traces of a medial dark line.

Hab. Bhamo, Burma. *Exp.* 50 millim.

SECT. II. Hind wing with the outer margin evenly rounded; the costa arched.

932. **Kosala rufa,** n. sp.

♂. Antennæ with the shaft ochreous, the branches brown; head and thorax rufous. Fore wing rufous, suffused with ferruginous red near the base; two white spots at end of cell; a nearly straight dark medial line; an indistinct series of submarginal ferruginous spots. Abdomen and hind wing vinous brown. Underside paler and duller; both wings with a dark line just beyond the middle.

Hab. Nága Hills (*Doherty*). *Exp.* 62 millim. Type in coll. Elwes.

SECT. III. Hind wing with the costa straight.

933. **Kosala flavosignata,** *Moore, Lep. Atk.* p. 77, pl. iii, fig. 17; *C. & S.* no. 1487.

♂. Antennæ brown; head and thorax bright dark brick-red. Fore wing bright red-brown; a waved antemedial dark line, with yellow on each side of it towards inner margin; a small whitish-yellow spot at end of cell; a waved postmedial line; an irregular lunulate dark submarginal band outwardly edged with orange-red. Abdomen and hind wing vinous brown.

Hab. Sikhim. *Exp.* 44 millim.

Genus TRICHIURA.

Trichiura, *Steph. Ill. Brit. Ent., Haust.* ii. p. 42 (1828).

Type, *T. cratægi*, Linn., from Europe.
Range. Europe; Sikhim; Khásis.

Palpi long and thickly clothed with hair. Antennæ with the branches long in male. Legs thickly clothed with hair; mid and hind tibiæ with minute terminal pairs of spurs. Fore wing broad and rounded; veins 6 and 7 from angle of cell; the stalk of veins 9 and 10 short. Hind wing with veins 4 and 5 from angle of cell; 8 almost touching 7; one accessory costal veinlet.

934. **Trichiura khasiana**, *Moore, Lep. Atk.* p. 82, pl. 3, fig. 21; *C. & S.* no. 1480.

♂. Head and thorax very dark red-brown; tips of antennal branches and the vertex of thorax reddish; abdomen duller brown. Fore wing black-brown, irrorated with grey scales; the

Fig. 291.—*Trichiura khasiana*, ♂. 1.

veins bright red-brown; a straight grey antemedial line; a curved postmedial line; a waved submarginal red-brown line. Hind wing umber-brown.

Hab. Sikhim; Khásis. *Exp.* 38–48 millim.

Genus CRINOCRASPEDA, nov.

Type, *C. torrida*, Moore.
Range. Sikhim; Khásis; Manipur.

Palpi slight and porrect. Antennæ with the branches of moderate length. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing short and broad; the outer margin crenulate; veins 6 and 7 stalked, 9 and 10 on a long stalk. Hind wing rounded, the outer margin crenulate; the cell open; no accessory costal veinlets.

935. **Crinocraspeda torrida**, *Moore, Lep. Atk.* p. 76; *C. & S.* no. 1450.

♂. Olive-brown with an ochreous tinge. Antennæ with the shaft ochreous, the branches black. Fore wing with an ante-

medial slightly curved dark line; at centre of cell a triangular apple-green spot, which may be reduced to a speck or altogether absent; a large quadrangular apple-green spot at end of cell; a curved dark postmedial line. Hind wing with an indistinct medial

Fig. 292.—*Crinocraspeda torrida*, ♂. 1/1.

line. Both wings with an indistinct purplish-grey submarginal lunulate line, more distinct on the underside. Both wings may be largely suffused with ochreous, especially the inner margin of fore wing and costa of hind wing.

Hab. Sikhim; Khásis; Manipur. *Exp.* 48–52 millim.

Genus TRABALA.

Trabala, *Wlk. Cat.* vii, p. 1785 (1856).
Amydona, *Wlk. Cat.* vi, p. 1413 (1855, præocc.).

Type, *T. vishnu*, Lef.

Range. China; throughout India, Ceylon, and Burma; Java.

Palpi somewhat short and slight. Antennæ with branches shorter in female than in male; mid and hind tibiæ with a minute terminal pair of spurs. Fore wing broad, the outer margin rounded, the cell open; the stalk of veins 9 and 10 very long. Hind wing with the cell open; veins 6 and 7 arising very near the base; no accessory costal veinlets.

936. **Trabala vishnu**, *Lef. Zool. Journ.* iii, p. 207; *C. & S.* no. 1456; *Moore, Lep. E. I. Co.* pl. xxii, figs. 3, 3 *b* (larva).
Gastropacha sulphurea, *Koll. Hügel's Kaschmir*, iv, p. 471; *C. & S.* no. 1449.
Trabala mahananda, *Moore, P. Z. S.* 1865, p. 821; *C. & S.* no. 1454.
Amydona basalis, *Wlk. Cat.* vi, p. 1415.
Amydona prasina, *Wlk. Cat.* vi, p. 1417.
Amydona pallida, *Wlk. Cat.* vi, p. 1417.

♂. Pale apple-green; antennæ ochreous brown, the disk of fore wing and inner margin of hind wing whitish; fore wing with a faint pale antemedial line curved below the costa; a dark speck at end of cell; a pale straight oblique postmedial line,

which becomes medial on the hind wing; both wings with a series of small submarginal dark spots.

♀. Yellowish-green, which fades to ochreous; the lines and spots of both wings enlarged and blackish; the spot at end of cell of fore wing large, conspicuous, and irrorated with black scales, and sometimes centred with grey; a red-brown patch thickly irrorated with black occupying the whole medial inner area from the median nervure to inner margin; cilia of both wings blackish.

Fig. 293.—*Trabala vishnu*, ♂. $\frac{1}{1}$.

Larva. Head yellow, spotted with red; the colour brownish grey, with long lateral tufts on each somite; that on the first black and grey, the others grey; paired dorsal and lateral black spots on each somite, from which spring long black hairs, the spots on the thoracic somites coalescing. Another form of the larva is blackish with a broad white dorsal stripe, the anterior tufts red-brown; a third form is reddish with the lateral spots blue.

Cocoon ochreous, with short black hairs projecting from it, which are intensely irritating.

Hab. China; throughout India, Ceylon, and Burma; Java. *Exp.*, ♂ 50–60, ♀ 80–90 millim.

937. **Trabala irrorata**, *Moore, Trans. Ent. Soc.* 1884, p. 375; *C. & S.* no. 1452.

♀. Bright yellow. Fore wing irrorated with black scales on inner and outer areas; an indistinct dark antemedial dentate line. Hind wing with the inner part of the disk thickly suffused with fuscous scales; the outer area with blackish. Both wings with an irregular submarginal series of grey spots irrorated with black scales; the cilia yellow. Underside of hind wing with a waved medial line.

Hab. Tavoy; Mergui; Borneo; Java. *Exp.* 76 millim.

Genus LENODORA.

Lenodora, *Moore, Lep. Ceyl.* ii, p. 144 (1883).

Type, *L. vittata*, Wlk.
Range. Throughout India, Ceylon, and Burma.

Palpi rather short and thickly clothed with hair. Antennæ with the branches long in male, short in female. Legs thickly clothed with hair; minute terminal pairs of spurs to mid and hind tibiæ. Fore wing broad and rounded; veins 6 and 7 stalked; the stalk of veins 8 and 9 rather short. Hind wing with veins 4 and 5 from angle of cell; 8 curved and met by a bar from 7; the accessory costal veinlets numerous and prominent.

938. **Lenodora vittata**, *Wlk. Cat.* vi, p. 1440; *C. & S.* no. 1444.
Miresa subcostalis, *Wlk. Cat.* xxxii, p. 476; *C. & S.* no. 1443; *Moore, Lep. Ceyl.* ii, pl. 137, figs. 3, 3 *a, b* (larva).

♂. Bright red-brown; fore wing with a white streak below the costa from the base to near outer margin below the apex.
♀. Pale ochreous brown, with only a slight red tinge.
Some Ceylon specimens are much duller in colour than typical males.

Fig. 294.—*Lenodora vittata*, ♂. ¹⁄₁.

Larva. Purplish black above, pale brown below; a sublateral series of black streaks and dots; anterior somites dorsally divided by pale bands; subdorsal tufts of white hair on 5th to 11th somites.
Hab. Almorah; throughout S. India and Ceylon. *Exp.*, ♂ 43–48, ♀ 50–54 millim.

939. **Lenodora signata**, *Moore, Trans. Ent. Soc.* 1884, p. 374; *C. & S.* no. 1442.
Lenodora fasciata, *Moore, Trans. Ent. Soc.* 1884, p. 374; *C. & S.* no. 1440; *Hmpsn. Ill. Het.* viii, pl. 142, fig. 6.
Lenodora fusca, *Moore, Trans. Ent. Soc.* 1884, p. 374; *C. & S.* no. 1441.

♂. Bright red-brown; fore wing with an indistinct darker postmedial curved band.
♀. Umber-brown; fore wing with a pale indistinct postmedial band.
The form *signata* has a pale spot at end of cell of fore wing;

only the female is known, and it may be a distinct species from *fusca*=*fasciata*.

Hab. Dehra Dún; Bombay; Nilgiri Plateau. *Exp.*, ♂ 54, ♀ 56 millim.

940. **Lenodora semihyalina**, *Swinh. Trans. Ent. Soc.* 1890, p. 196, pl. vi, figs. 10, 16.

♂. Reddish brown with a yellow tinge; fore wing with an indistinct ochreous band from the outer margin below the apex to inner margin before middle; hind wing with a large pale subapical patch.

♀. Ochreous grey, with faint traces of the oblique band of the fore wing.

Hab. Nágas; Rangoon; E. Pegu; Bassein. *Exp.*, ♂ 40, ♀ 48 millim.

Genus ESTIGENA.

Estigena, *Moore, Lep. E. I. Co.* p. 426 (1859).

Type, *E. pardalis*, Wlk.

Range. Arabia; throughout India and Ceylon; Burma; Java.

Palpi very long and slender, varying somewhat in length. Antennæ with the branches short. Legs with the spurs very minute. Fore wing long and narrow, the outer margin very obliquely rounded; veins 6, 7, 8 stalked; the stalk of veins 9 and 10 long. Hind wing produced and oval in shape; veins 3, 4, 5 stalked; 8 curved and met by a bar from 7; the accessory costal veinlets numerous and prominent.

941. **Estigena pardalis**, *Wlk. Cat.* vi, p. 1453; *C. & S.* no. 1499 A.
Estigena nandina, *Moore, Lep. E. I. Co.* p. 427; *id. Lep. Ceyl.* ii, pl. 142, figs. 1, 1 *a*; *C. & S.* no. 1499.

♂. Palpi blackish; head and thorax red-brown, with a dark stripe on the vertex; abdomen paler. Fore wing red-brown, or

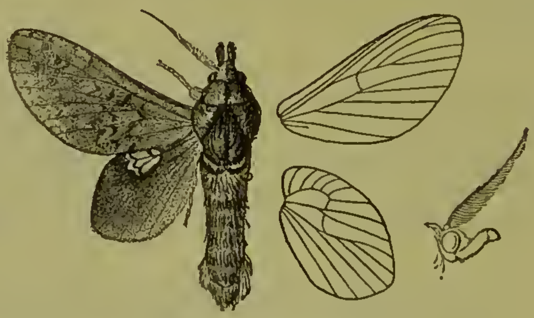

Fig. 295.—*Estigena pardalis*, ♂. 1/1.

pale ochreous-brown, suffused with fuscous and crossed by four indistinct waved dark lines; a black speck at end of cell. Hind

wing ochreous or red-brown; the inner area paler; three indistinct waved lines, which are obsolete on inner half; a large ochreous patch may be present below the costa.

♀ apparently never has the ochreous patch on the hind wing.

Hab. Arabia; throughout India and Ceylon; Nágas; Mergui; Andamans; Java. *Exp.*, ♂ 38–48, ♀ 70–76 millim.

Genus ODONESTIS.

Odonestis, *Germar, Prod.* p. 49 (1811).

Type, *O. potatoria*, Fabr., from Europe.

Range. Palæarctic and Oriental regions; Australia.

Palpi very long and slender. Antennæ with branches shorter in female than male. Legs with the spurs very minute. Fore wing long, the apex acute; the outer margin obliquely rounded; veins 6 and 7 stalked; the stalk of veins 9 and 10 short. Hind wing with veins 4 and 5 from cell or stalked; 8 curved, and met by a bar from 7; the accessory costal veinlets numerous and prominent.

Sect. I. Fore wing with vein 8 from the angle of cell in both sexes.

942. **Odonestis læta**, *Wlk. Cat.* vi, p. 1416; *C. & S.* no. 1453; *Moore, Lep. E. I. Co.* pl. xii *a*, figs. 7, 7 *a*.
Lasiocampa decisa, *Wlk. Cat.* vi, p. 1441; *C. & S.* no. 1489.
Lasiocampa inobtrusa, *Wlk. Trans. Ent. Soc.* (3) i, 1862, p. 85; *C. & S.* no. 1494.

Head, thorax, and abdomen rather pale red-brown. Wings red-brown; fore wing with an indistinct antemedial waved line; a large whitish patch at lower end of cell suffused with reddish

Fig. 296.—*Odonestis læta*, ♂. 1/1.

brown and with a small spot above it; a very oblique dark line from near the apex, curved downwards to centre of inner margin; a waved submarginal line; hind wing with the costal area darker.

In the male the ground-colour of the whole insect may be dusky brown, with the head and collar darker. In the form of the male

decisa=*inobtrusa* the colour is much duller with hardly any red tinge, the line less oblique, and the spots at end of cell of fore wing are reduced to fuscous marks. The female may have these same spots reduced to a single white speck; the distance between the oblique line and the end of the cell varies much.

Larva. Dark brown, with dusky strigæ; lateral grey and black tufts of hair, the pair on 1st somite longest; a long dorsal black tuft on 1st somite and a grey tuft on 2nd; V-shaped short black tufts on 3rd–10th somites; a long dorsal tuft on 11th somite; some reddish lateral spots.

Cocoon whitish, closely woven and papery in substance.

Hab. N.W. Himalayas; Sikhim; Sylhet; Burma; Sumatra; Java. *Exp.*, ♂ 44–54, ♀ 80 millim.

943. **Odonestis divisa**, *Moore, Lep. Ceyl.* ii, p. 150, pl. 141, fig. 2; *C. & S.* no. 1493.

Estigena purpurascens, *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 10.

♂. Head and thorax purplish red-brown. Fore wing purplish red-brown; a large chestnut or whitish spot at end of cell of fore wing; an indistinct dark oblique line from the apex to centre of inner margin. Hind wing with the costal area purplish red-brown, the remainder flesh-colour. Cilia of both wings chestnut.

♀ with the ground-colour of the thorax and fore wing red-brown.

The Sikhim specimen differs in having the inner area of fore wing suffused with yellow.

Hab. Sikhim; Kelani Valley, Ceylon. *Exp.*, ♂ 52, ♀ 76 millim.

944. **Odonestis castanea**, n. sp.

♂. Differs from *læta* in having the head, thorax, abdomen, and fore wing chestnut-yellow; the last with the discal spots reduced to two minute grey specks; the oblique grey line straight, not curved near inner margin; hind wing dull brown; the cilia ochreous.

♀. Redder chestnut; the costa of hind wing reddish brown.

Hab. Sikhim. *Exp.*, ♂ 40, ♀ 60 millim. Type, ♂ in coll. Druce, ♀ in B. M.

945. **Odonestis signata**, *Moore, Lep. Atk.* p. 76; *C. & S.* no. 1498.

♂. Differs from the *decisa* form of *læta* in the thorax and basal part of abdomen being dark red-brown. Fore wing with the tuft of hair on inner margin long; the lower whitish spot narrow and elongate; the postmedial line narrow and highly waved. Hind wing with an indistinct medial line.

Hab. Sikhim, 4000 feet. *Exp.* 51 millim.

946. **Odonestis isocyma**, n. sp.

♂. Dull red-brown. Fore wing with an indistinct waved antemedial line; a dark speck at end of cell; an evenly curved dark line from the apex to inner margin, this being the main distinguishing point. Hind wing flesh-colour, with the costa darker.

Hab. Nága Hills, 6000 feet (*Doherty*). *Exp.* 41 millim. Type in coll. Elwes.

947. **Odonestis pyriformis**, *Moore, P. Z. S.* 1879, p. 408, pl. 34, fig. 7; *C. & S.* no. 1496.

♂. Differs from *læta* in being darker red-brown; the lower whitish spot of the fore wing smaller and usually pyriform; the oblique line greyer and far from the cell. Hind wing uniform red-brown, usually with an indistinct dark transverse line.

Larva. Dorsum black; lateral area brown; a scarlet lateral line and strigæ, grey and black subdorsal tufts on 2nd–11th somites; dorsal red-brown tufts on 1st somite and lateral tufts on each somite.

Hab. N.W. Himalayas; Sikhim. *Exp.* 50 millim.

SECT. II. Fore wing with vein 8 stalked with 6 and 7 in the male.

948. **Odonestis plagifera**, *Wlk. Cat.* vi, p. 1459; *C. & S.* no. 1468; *Butl. Ill. Het.* v, pl. 99, fig. 5.

♂. Dark red-brown. Fore wing with an indistinct antemedial line; a pale line from the middle of inner margin curving up obliquely to near the costa, then bent down with a curve to near outer angle, and enclosing in its upper half a chocolate patch, which extends beyond it to the apex and outer margin; some purplish suffusion beyond it towards the apex. Hind wing paler red-brown, with traces of a medial line; outer margin of both wings dark.

♀. Paler red-brown; fore wing with a dark spot at outer angle.

Hab. Simla; Nepal; Sikhim; Java. *Exp.*, ♂ 68-72, ♀ 100–116 millim.

SECT. III. Fore wing with vein 8 stalked with 6 and 7 in the female; veins 4 and 5 stalked. Hind wing with veins 4 and 5 stalked.

949. **Odonestis lineata**, *Moore, Lep. Atk.* p. 81; *C. & S.* no. 1462.

♂. Ochreous chestnut-brown; palpi and antennæ blackish; fore wing with the costal edge dark; a longitudinal blackish line from base to outer margin below apex; numerous basal and discal indistinct dark waved lines; a submarginal series of black spots.

Hind wing rather paler. Underside with two postmedial indistinct dark lines on both wings.

Hab. Sikhim. *Exp.* 80 millim.

Genus GASTROPACHA.

Gastropacha, *Ochs. Schmett. Eur.* iii, p. 239 (1810).

Type, *G. quercifolia*, Linn., from Europe.

Range. Europe; Japan; China; Himalayas.

Palpi very long, the 3rd joint slender. Antennæ with the branches short, especially in female; mid and hind tibiæ with minute terminal pairs of spurs. Fore wing long, the apex acute, outer margin crenulate; veins 6 and 7 stalked; the stalk of veins 9 and 10 long. Hind wing with part of the costa and outer margin crenulate; veins 4 and 5 from cell; 8 curved and met by a bar from cell; accessory costal veinlets numerous and prominent.

950. **Gastropacha undulifera**, *Wlk. Cat.* vi, p. 1395; *C. & S.* no. 1451.

♀. Head, thorax, and abdomen very pale brownish grey. Wings pale brownish grey, slightly irrorated with fuscous; an indistinct dark antemedial waved line; a dark streak on disco-

Fig. 297.—*Gastropacha undulifera*, ♀. 1/1.

cellulars; two indistinct waved oblique postmedial lines close together; the crenulations of both wings dark at the projections, pale at excisions.

Cocoon formed of pale silk loosely woven.

Hab. Dharmsála. *Exp.* 70 millim.

951. **Gastropacha sinuata**, *Moore, Lep. Atk.* p. 76; *C. & S.* no. 1448.

♂. Pale reddish ochreous; antennæ black. Fore wing with two indistinct antemedial waved lines; a black spot at end of cell; two postmedial and one submarginal indistinct waved lines; a series of

marginal indistinct marks. Hind wing with three waved postmedial lines, not reaching the inner margin.

Hab. Sikhim. *Exp.* 58 millim.

952. **Gastropacha divaricata,** *Moore, Trans. Ent. Soc.* 1884, p. 374; *C. & S.* no. 1446.

♀. Dark red-brown. Fore wing with the outer margin more irregular than in the preceding species; dark irregularly curved ante- and postmedial lines which nearly meet on inner margin; between these are two less prominent lines which meet and end at vein 2; an indistinct series of submarginal grey spots.

Hab. Sikhim. *Exp.* 88 millim.

Genus **STENOPHYLLOIDES,** nov.

Type, *S. sikkima,* Moore.

Range. Sikhim.

Palpi very long and slender. Antennæ with the branches rather short and decreasing rapidly to apex. Legs with the spurs very minute. Fore wing very long and narrow, the outer margin very oblique, angulated and crenulate; veins 6, 7, 8 stalked; the stalk of veins 9 and 10 long. Hind wing with veins 4 and 5 stalked; 8 curved and met by a bar from 7; the accessory costal veinlets very numerous and prominent, the outer margin crenulate.

953. **Stenophylloides sikkima,** *Moore, Lep. Atk.* p. 75; *C. & S.* no. 1447.

♂. Palpi blackish; head, thorax, and abdomen red-brown; a

Fig. 298.—*Stenophylloides sikkima,* ♂. $\frac{1}{1}$.

dark stripe on vertex of head and thorax; metathorax with a yellow tinge. Fore wing purplish red-brown; the inner and apical areas with a yellow tinge; about seven very indistinct waved lines.

Hind wing dark red-brown, the costal area ochreous; traces of three or four waved medial lines.

♀ paler and yellower in tone.

Hab. Sikhim. *Exp.*, ♂ 66, ♀ 96 millim.

Species formerly recorded as Indian which are omitted.

Trabala varia, Wlk., C. & S. no. 1455, belongs to the genus *Lechriolepis*, Butl., and is from W. Africa.

Trisula variegata, Moore, C. & S. no. 1331, is a *Noctua*.

Family PTEROTHYSANIDÆ.

A family consisting of a single genus of day-flying moths.

Palpi upturned, proboscis present. Antennæ simple. Mid and hind tibiæ with terminal pairs of spurs. Fore wing with veins 1 *a* and *c* absent; 5 from the lower angle of cell. Hind wing with veins 1 *a* and *c* absent; 5 from lower angle of cell, 8 with a precostal spur, and bent down and touching 7 at middle of cell. Frenulum absent.

Larva unknown.

Genus **PTEROTHYSANUS.**

Pterothysanus, *Wlk. Cat.* ii. p. 401 (1854).

Type, *P. laticilia*, Wlk.

Range. ? China; Sikhim; Assam; Burma.

Palpi upturned, reaching above vertex of head. Antennæ simple. Mid and hind tibiæ with terminal pairs of spurs. Fore wing with vein 7 given off just before the end of cell; 8 and 9 stalked, and from far before the end. Hind wing with a double fringe of very long hair on inner margin, and scattered long hairs on inner area of both wings.

954. **Pterothysanus laticilia**, *Wlk. Cat.* ii, p. 401; *Butl. Ill. Het.* i, pl. 14, fig. 2; *C. & S.* no. 475.
Pterothysanus lanaris, *Butl. A. M. N. H.* (5) xiv, p. 406.

Head and collar fiery red; thorax black; abdomen orange, with a series of black dorsal spots and paired lateral white spots; all the segments with black bands below slightly spotted with white, the first two banded also above. Fore wing black; a large white spot on inner margin before the middle; one at end of cell; medial, postmedial, and submarginal series of spots, those towards inner margin coalescing, the first two series irregular; some small marginal spots towards outer angle. Hind wing white, with a

black medial band ; a postmedial lunulate band not reaching inner margin, sending spurs along the veins to the submarginal series of spots ; a marginal series of spots which more or less coalesce with the submarginal series.

Fig. 299.—*Pterothysanus laticilia*, ♂. $\frac{1}{1}$.

The form *lanaris* from ? China has the postmedial band of the hind wing much reduced.

Hab. ? China ; Sikhim ; Bhutan ; Assam. *Exp.*, ♂ 64, ♀ 75 millim.

955. **Pterothysanus atratus**, *Butl. A. M. N. H.* (5) xvi, p. 346, pl. viii, fig. 3 ; *C. & S.* no. 474.

♂. Differs from *laticilia* in having a series of marginal pink spots to both wings ; the white markings are considerably reduced, especially those towards outer margin. Abdomen with paired white spots on the ventral band.

Hab. Assam. *Exp.* 75 millim.

956. **Pterothysanus noblei**, *Swinh. P. Z. S.* 1889, p. 401, pl. 44. fig. 3.

Differs from *atratus* in the marginal pink spots of both wings being larger and brighter ; the wings otherwise marked as in *laticilia.* Abdomen with the white spots on ventral black bands elongate.

Hab. Burma. *Exp.*, ♂ 54, ♀ 58 millim.

957. **Pterothysanus pictus**, *Butl. A. M. N. H.* (5) xiv, p. 407 ; *C. & S.* no. 476.

♂. Differs from *noblei* in the marginal pink spots of both wings

being small and pale; the white area much more extensive; the black markings small and only conjoined along the costa of fore wing, towards the margin of both wings being reduced to small round spots; the postmedial series placed further from the margin.

Hab. Elephant Isl., Mergui. *Exp.* 60 millim.

These last three forms are very possibly varieties of one species.

Family LYMANTRIIDÆ.

A family of moths generally of nocturnal flight *, mostly clothed with hair-like scales and with very highly developed pectinations to the antennæ in the male, the branches often having long terminal spines, and spines to retain them in position; the females often have a largely developed anal tuft of hair for covering the eggs.

Proboscis absent; legs hairy; frenulum present †. Fore wing with vein 1 *a* not anastomosing with 1 *b*; 1 *c* absent †; 5 from close to lower angle of cell. Hind wing with two internal veins †; 5 from close to lower angle of cell ‡; 8 nearly touching 7 at middle of cell and connected with it by a bar.

Larva hairy; generally clothed with very thick hair or with thick tufts of hair and forming a cocoon into which these hairs are woven, they being often of a very poisonous nature.

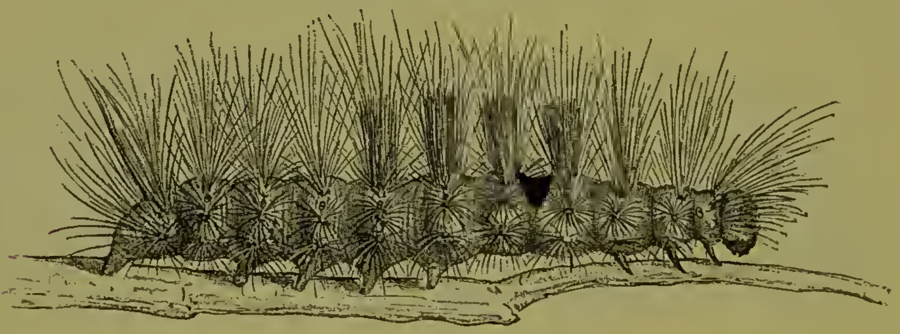

Fig. 300.—Larva of *Dasychira horsfieldi*. $\frac{1}{1}$.

Key to the Genera.

A. Frenulum present.
 a. Fore wing with vein 9 given off from 10 and anastomosing with 8 to form an areole.

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* Except *Orgyia* and *Aroa*.
† Except in the lowly genus *Ratarda*.
‡ Except in *Gazalina* and *Porthesia*.

a'. Palpi porrect.

a². Palpi slight and not projecting beyond the frons; head, thorax, and abdomen clothed with long hair.

a³. Mid and hind tibiæ without spurs .... 1. VARMINA, p. 434.

b³. Mid and hind tibiæ with a terminal pair of spurs .... 2. LACHANA, p. 435.

b². Palpi extending beyond the frons; head, thorax, and abdomen smoothly scaled.

a³. Fore tarsi with lateral tufts of hair to the joints.

a⁴. Hind tibiæ with one pair of spurs .... 3. ORGYIA p 436.

b⁴. Hind tibiæ with two pairs of spurs.

a⁵. Fore wing short and broad, the outer margin nearly erect .... 8. CIFUNA, p. 446.

b⁵. Fore wing more produced, the outer margin oblique . 9. DASYCHIRA, p. 447.

b³. Fore tarsi without lateral tufts of hair to the joints.

a⁴. Fore wing short and broad.

a⁵. Hind tibiæ with two pairs of spurs................ 4. AROA, p. 437.

b⁵. Hind tibiæ with one pair of spurs................ 6. PANTANA, p. 443.

b⁴. Fore wing more produced.

a⁵. Hind wing with veins 6 and 7 stalked .... 5. LÆLIA, p. 440.

b⁵. Hind wing with veins 6 and 7 from cell .... 7. THIACIDAS, p. 445.

b'. Palpi upturned.

a². Palpi slight, closely approximated to frons, and not reaching the vertex of head................ 13. DAPLASA, p. 458.

b². Palpi reaching vertex of head.... 11. NUMENES, p. 455.

c². Palpi reaching above vertex of head .... 12. PIDA, p. 457.

b. Fore wing with veins 9 and 10 anastomosing with 8 to form the areole .... 10. MARDARA, p. 454.

c. Fore wing with no areole, or rarely vein 10 arising from 11 and anastomosing with 8 and 9 or giving off 9 to anastomose with 8 and form an areole.

a'. Fore wing with veins 7, 8, 9, 10 stalked.

a². Palpi upturned.

a³. Fore wing with the apex rounded.

a⁴. Fore wing with vein 10 given off near apex.............. 14. HERACULA, p. 458.

b⁴. Fore wing with vein 10 given off nearer the cell than 7 .. 15. LYMANTRIA, p. 459.

b³. Fore wing with the apex acute. 19. TOPOMESA, p. 469.

b^2. Palpi porrect. Hind wing with vein 5 from near lower angle of cell, or absent.
a^3. Hind tibiæ with two pairs of spurs.
a^4. Palpi short.
a^5. Hind wing with vein 5 absent .... 22. PORTHESIA, p. 484.
b^5. Hind wing with vein 5 present.
a^6. Fore wing with vein 10 given off near the apex. . 21. EUPROCTIS, p. 470.
b^6. Fore wing with vein 10 given off nearer the cell than, or from the same point as, 7 ...... 27. CISPIA, p. 492.
b^4. Palpi long .... 16. IMAUS, p. 466.
b^3. Hind tibiæ with one pair of spurs .... 23. PERINA, p. 486.
b'. Fore wing with veins 8, 9, 10 stalked, 7 from cell.
a^2. Hind wing with vein 5 from near lower angle of cell; palpi very long .... 20. DACTYLORHYNCHA, [p. 470.
b^2. Hind wing with vein 5 from near upper angle of cell; fore wing with veins 3 and 4 coincident; palpi minute.................. 18. GAZALINA, p. 468.
c'. Fore wing with vein 10 from the cell or rarely stalked with 11.
a^2. Palpi porrect.
a^3. Palpi long; hind tibiæ with two pairs of spurs .... 17. HIMALA, p. 467.
b^3. Palpi short; hind tibiæ with one pair of spurs.
a^4. Hind wing with veinlets between vein 1 *a* and inner margin .... 26. DENDROPHLEPS, [p. 491.
b^4. Hind wing with no veinlets between vein 1 *a* and inner margin .... 25. CAVIRIA, p. 489.
b^2. Palpi upturned .... 24. LEUCOMA, p. 487.
B. Frenulum absent .... 28. RATARDA, p. 493.

Genus **VARMINA.**

Varmina, *Moore, P. Z. S.* 1888, p. 405.

Type, *V. indica*, Wlk.
Range. N.W. Himalayas.

Palpi short, slender, and porrect; antennæ of male with short branches, dilated distally; legs hairy and without spurs. Head small and hairy; abdomen of female with a large anal tuft. Fore wing with vein 9 arising from 10 and anastomosing with 8 to form a long areole. Hind wing with veins 3 and 4 from angle of cell; 5 from above the angle; 6 and 7 from upper angle.

958. **Varmina indica,** *Wlk. Cat.* v, p. 1039 ; *C. & S.* no. 1177

♂. Head and thorax black, clothed with grey and brown hair ; abdomen black. Fore wing blackish, thickly sprinkled with orange spots ; black spots on a grey ground at middle and end of cell ; an irregular marginal grey area with a submarginal series of black spots. Hind wing black.

♀. Head clothed with white hair ; collar and abdominal tuft ochreous white ; the wings paler.

Fig. 301.—*Varmina indica,* ♂. 1/1.

Larva black, speckled with white and with dorsal and lateral tufts of hair arising from fulvous tubercles ; the thoracic and anal somites with reddish tufts, the medial with grey ; 4th and 11th somites with long dorsal black tufts.

Hab. N.W. Himalayas. *Exp.*, ♂ 32, ♀ 42 millim.

Genus **LACHANA.**

Lachana, *Moore, P. Z. S.* 1888, p. 397.

Type, *L. ladacensis*, Moore.

Range. Kashmir ; Ladak.

Palpi short, hairy, porrect and hidden by the long hair from the frons ; antennæ with the branches short ; thorax and abdomen hairy ; mid and hind tibiæ with minute terminal pairs of spurs. Fore wing with vein 9 arising from 10 and anastomosing with 8 to form a short areole. Hind wing with veins 3 and 4 stalked ; 5 from above angle of cell ; 6 and 7 from upper angle.

959. **Lachana ladacensis,** *Moore, P. Z. S.* 1888, p. 398 ; *Butl. Ill. Het.* vii, pl. 121, fig. 6 ; *C. & S.* no. 1071 A.

Fig. 302.—*Lachana ladacensis,* ♂. 1/1.

♂. Head clothed with grey hair ; thorax and abdomen with brown and black hair. Fore wing pale brown irrorated with dark

scales; an indistinct antemedial line and postmedial band excurved beyond end of cell; an ill-defined marginal fuscous band. Hind wing fuscous brown; the marginal area black-brown; cilia greyish.

Hab. Kashmir; Ladak. *Exp.* 28 millim.

Genus **ORGYIA**.

Orgyia, *Ochs. Schmett. Eur.* iii, p. 208 (1810).
Notolophus, *Germar, Prod.* ii, p. 35 (1812).
Gynæphora, *Hübn. Verz.* p. 161 (1818).

Type, *O. antiqua*, Linn., from Europe.

Range. Universally distributed, except the Neotropical region.

♂. Flight diurnal. Palpi short, porrect, and heavily fringed with hair; antennæ with the branches long and with long spines at extremities; legs heavily fringed with hair; abdomen with a dorsal tuft on 2nd segment. Fore wing with vein 9 arising from 10 and anastomosing with 8 to form an areole. Hind wing with veins 3 and 4 from angle of cell; 5 from just above angle; 6 and 7 stalked.

♀ with the palpi and legs less hairy; antennæ serrate; wings aborted, scale-like, and covered with hair; abdomen covered with hair and immensely dilated when full of eggs.

960. **Orgyia postica**, *Wlk. Cat.* iv, p. 803; *Moore, Lep. Ceyl.* ii, pl. 109, figs. 1, 1 *a, b* (larva); *C. & S.* no. 875.
Orgyia ceylanica, *Nietn. Ed. New Phil. Jour.* xv, 1862, p. 34; *C. & S.* no. 874.
Orgygia ocularis, *Moore, Lep. Atk.* p. 44; *C. & S.* no. 868.

♂. Head, thorax, and abdomen brown. Fore wing brown, with an indistinct oblique subbasal line; waved antemedial and postmedial lines which approach each other at lower angle of cell, the area between them slightly tinged with bluish grey and with a waved dark line edged with white on each side of the discocellulars; two indistinct waved submarginal lines; the apex slightly tinged with grey and with some subapical dark streaks. Hind wing dark brown.

Fig. 303.—*Orgyia postica*, ♂. 1/1.

♀ with aborted wings.

Larva. Yellowish, sparsely clothed with brown hair; one dorsal and two lateral brown bands; paired tufts of long brown hair on 1st and 11th somites projecting forward and backward; lateral tufts of grey hair from 4th and 5th somites; dorsal tufts of yellow hair on 4th–7th somites; the head red.

Hab. Sikhim; Nágas; Formosa; Nilgiris; Ceylon; Burma; Borneo; Java; New Guinea. *Exp.* 24–28 millim.

961. **Orgyia viridescens**, *Wlk. Cat.* iv, p. 798; *C. & S.* no. 878.

♂. Differs from *postica* in the vertex of thorax and base of fore wing being pale-spotted; the ante- and postmedial lines widely separated below the cell, and the space between them much more shot with bluish green and purple; the submarginal line with a white lunule on it near outer angle. Hind wing paler, with traces of a postmedial curved line.

Hab. Ceylon. *Exp.* 30 millim.

962. **Orgyia turbata**, *Butl. Trans. Linn. Soc.* (2) i, 1879, p. 560.

♂. Head, thorax, and abdomen brown and grey. Fore wing brown suffused with orange; indistinct dark waved subbasal, antemedial, and postmedial lines, which approach each other towards inner margin; an indistinct dark patch at end of cell; orange patches at middle of cell, apex, and outer angle. Hind wing red-brown.

Hab. Karen Hills; Malacca. *Exp.* 24 millim.

Genus **AROA**.

Aroa, *Wlk. Cat.* iv, p. 791 (1855).
Baziza, *Wlk. Cat.* xxxii, p. 398 (1865).

Type, *A. discalis*, Wlk., from S. Africa.

Range. S. Africa; China; throughout India, Ceylon, and Burma; Java.

Flight diurnal: differs from *Orgyia* in the palpi being much longer and not so heavily fringed with hair, the 3rd joint prominent; legs not so hairy. Female with fully developed wings; the branches of antennæ shorter than in the male.

963. **Aroa maxima**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 9.

♂. Head, thorax, and abdomen dark brown; antennæ with the shaft pale at sides. Fore wing black-brown; the cell pale with a black speck on a pale patch at the end of it; traces of a curved submarginal line; cilia chequered dark and lighter brown. Hind wing smoky black, with a white fascia from the base to beyond end of cell; the cilia pale. Underside of both wings with a prominent cell-spot and the discal area pale.

Hab. Ceylon. *Exp.* 52 millim.

964. **Aroa major**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, figs. 3, 5.

♂. Differs from *maxima* in the head, thorax, and fore wing being ochreous brown. Fore wing with no pale fascia in the cell; the black speck on a white patch much more prominent, as also is the submarginal line which is incurved between veins 2 and 3. Hind wing greyish fuscous, except the costal black area. Underside whitish.

♀. Ochreous, the wings irrorated with dark scales. Fore wing with a dark speck at end of cell; a submarginal series of indistinct dark specks. Hind wing paler, except the cilia.

Hab. Ceylon. *Exp.*, ♂ 42, ♀ 50 millim.

965. **Aroa plana,** *Wlk. Cat.* iv, p. 786; *Moore, Lep. Ceyl.* ii, pl. 110, figs. 1, 1 *a*; *C. & S.* no. 882.
Charnidas junctifera, *Wlk. Cat.* xxxii, p. 334.
Charnidas ochracea, *Moore, Lep. Atk.* p. 44; *C. & S.* no. 881.

♂. Differs from *major* in its small size, usually bright ochreous ground-colour, and better marked postmedial band to fore wing.

The colour may be either ochreous or reddish irrorated with dark scales or almost wholly fuscous.

Fig. 304.—*Aroa plana*, ♂. ½.

♀. As in *major*, but with a prominent or obsolescent postmedial band to fore wing; the amount of fuscous irroration varies much and the cell-spot may be prominent or obsolescent on both wings.

Hab. Kangra; Calcutta; Nilgiris; Ceylon. *Exp.*, ♂ 28–34, ♀ 36–42 millim.

966. **Aroa subnotata,** *Wlk. Cat.* iv, p. 803; *C. & S.* no. 884.

♂. Dark red-brown. Fore wing with the lines indistinct; the cell-spot on a small orange patch. Hind wing darker, with an orange discal fascia from the origin of vein 2 widening towards outer margin. Underside with the basal and inner areas of both wings suffused with orange.

Hab. Ceylon. *Exp.* 26 millim.

967. **Aroa sienna,** *Hmpsn. Ill. Het.* viii, p. 55, pl. 140, figs. 2, 9.

♂. Differs from *subnotata* in having the hind wing uniform dark red-brown without any orange fascia. Underside without orange suffusion.

♀. Differs from *plana* in having a reddish tinge.

Hab. Nilgiris; Ceylon. *Exp.*, ♂ 30, ♀ 36 millim.

968. **Aroa simplex,** *Wlk. Cat.* xxxii, p. 325; *Hmpsn. Ill. Het.* viii, pl. 143, fig. 17; *C. & S.* no. 876.

♂. Head, thorax, and abdomen brown. Fore wing yellowish

brown, with a postmedial line excurved at middle and with its inner edge pale. Hind wing orange, with a more or less pronounced brown margin.

Hab. Nilgiris. *Exp.* 30 millim.

969. **Aroa cinnamomea**, *Moore, Lep. Atk.* p. 44; *C. & S.* no. 879.
Charnidas aurantiaca, *Warr. P. Z. S.* 1888, p. 296; *C. & S.* no. 878 A.

♂. Differs from *simplex* in being rather paler. Fore wing with the discocellulars slightly darkened; no postmedial line; the cilia ochreous. Hind wing orange suffused with brown.

Hab. N.W. Himalayas; Attock, Punjab. *Exp.* 34 millim.

970. **Aroa socrus**, *Geyer, Hübn. Zutr.* v, p. 12, figs. 837, 838; *C. & S.* no. 869.
Aroa substrigosa, *Wlk. Cat.* iv, p. 794; *Butl. Ill. Het.* v, pl. 90, fig. 5.

♂. Head, thorax, and abdomen fulvous orange, the branches of antennæ blackish. Fore wing fulvous orange; the costal area and interspaces, especially towards outer margin, slightly streaked with fuscous. Hind wing brighter orange; cilia of both wings fuscous.

Hab. China; Assam; Khási, Nága, and Karen Hills; Java. *Exp.* 32–38 millim.

971. **Aroa pyrrhochroma**, *Wlk. Cat.* xxxii, p. 329; *C. & S.* no. 1033.
Aroa clara, *Swinh. P. Z. S.* 1885, p. 299, pl. 20, figs. 9, 10; *C. & S.* no. 1032.
Baziza detecta, *Wlk. Cat.* xxxii, p. 399; *C. & S.* no. 1071.

♂. Differs from *socrus* in the fore wing being slightly suffused with fuscous instead of streaked. Hind wing orange, with a broad marginal black border.

♀. Uniform greyish pink with an ochreous tinge.

The Bombay form *clara* is small, the female uniform pale orange.

Hab. N.W. Himalayas; Sikhim; Khásis; Nágas; Bombay. *Exp.*, ♂ 26–34, ♀ 34–44 millim.

972. **Aroa sagrara**, *Swinh. P. Z. S.* 1885, p. 299, pl. 20, fig. 13; *C. & S.* no. 1034.

♂. Uniform orange-brown; the cilia and underside brighter orange.

Hab. Belgaum. *Exp.* 32 millim.

973. **Aroa atrella**, n. sp.

♂. Head and legs fulvous; thorax, abdomen, and wings black-brown. Fore wing with a black spot at end of cell and very

indistinct ante- and postmedial curved pale lines, which somewhat approach each other below the median nervure.

Hab. Sikhim (*Möller*); Margharita (*Doherty*). *Exp.* 20 millim. Type in coll. Elwes.

974. **Aroa aurantifascia**, n. sp.

♂. Head, thorax, and abdomen black-brown. Fore wing brown suffused with dark green; traces of subbasal and antemedial lines; an indistinct waved postmedial and two submarginal lines. Hind wing black; a bright orange fascia from the base through the cell to near outer margin, interrupted by a broad black band on discocellulars; two orange fasciæ irrorated with black scales on inner area; cilia orange. Underside orange, the margins broadly black; a black band on discocellulars and fasciæ on median nervure of both wings, in hind wing continued to the marginal band.

Hab. Nága Hills, 6000 ft. (*Doherty*). *Exp.* 44 millim. Type in coll Elwes.

975. **Aroa xerampelina**, *Swinh. P. Z. S.* 1885, p. 299, pl. 21, figs. 8, 9; *C. & S.* no. 870.

♂. Yellowish or greyish brown; fore wing with an indistinct dark spot at end of cell, and broad irregular marginal band; hind wing slightly darker towards outer margin.

♀ with a greyer tone.

Hab. Poona; Nilgiris. *Exp.* 32 millim.

Genus **LÆLIA**.

Lælia, *Steph. Syst. Cat. Brit. Ins.* ii, p. 52 (1829).
Procodeca, *Wlk. Cat.* iv, p. 812 (1855).
Ricine, *Wlk. Cat.* iv, p. 824 (1855).
Charnidas, *Wlk. Cat.* iv, p. 797 (1855).
Repena, *Wlk. Cat.* iv, p. 799 (1855).
Lælioides, *Moore, Lep. Ceyl.* ii, p. 83 (1883).
Hondella, *Moore, Lep. Ceyl.* ii, p. 144 (1883).
Harapa, *Moore, Lep. Atk.* p. 47 (1879).
Odagra, *Wlk. Cat.* xxxii, p. 401 (1865).

Type, *L. cœnosa*, Hübn., from Europe.

Range. Europe; Japan; China; throughout India, Ceylon, and Burma; Java.

Flight nocturnal. Palpi long and porrect, the 2nd joint heavily fringed with hair, the 3rd long; antennæ with the branches long in male, short in female. Fore wing more produced than in *Aroa*, the wing-membrane forming a slight concavity on underside beyond the upper angle of cell; neuration similar.

SECT. I. Female with fully formed wings.

976. **Lælia suffusa,** *Wlk. Cat.* iv, p. 824.
Lælia angulifera, *Wlk. Cat.* iv, p. 919; *Moore, Lep. Ceyl.* ii, pl. 110, figs. 5, 5 *a*; *C. & S.* nos. 889, 1068.
Lælia prolata, *Swinh. Cat. Het. Mus. Oxon.* p. 195.

♂. Palpi and legs ochreous; head, thorax, abdomen, and fore wing white with a slight reddish tinge; the last with a submarginal series of seven black spots bent round to the middle of interno-median interspace. Hind wing pale, suffused with fuscous towards outer margin.

♀. Head, thorax, and fore wing uniform pale ochreous; abdomen and hind wing white.

Hab. Assam; Ceylon; Burma; Mergui; Java. *Exp.*, ♂ 34, ♀ 38 millim.

977. **Lælia devestita,** *Wlk. Cat.* xxxii, p. 402; *C. & S.* no. 1061.
Lælia pallida, *Moore, Trans. Ent. Soc.* 1884, p. 358; *C. & S.* no. 891.
Lælioides lactea, *Moore, Trans. Ent. Soc.* 1884, p. 358; *C. & S.* no. 887.

♂. Head, collar, and legs bright ochreous; thorax, abdomen, and wings white with a very slight ochreous tinge; some specimens with slight traces of a submarginal curved series of black specks to the fore wing.

Hab. Punjab; Bombay; Burma. *Exp.*, ♂ 36, ♀ 42 millim.

978. **Lælia lilacina,** *Moore, Trans. Ent. Soc.* 1884, p. 357; *C. & S.* no. 890.

♂. Head, thorax, and fore wing pale with a violet tinge; the submarginal spots prominent. Hind wing suffused with dark fuscous.

♀. Head, thorax, and fore wing pale ochreous; abdomen and hind wing white.

Hab. Nilgiris. *Exp.*, ♂ 34, ♀ 38 millim.

979. **Lælia rubripennis,** *Moore, Trans. Ent. Soc.* 1884. p. 358; *C. & S* no. 888.
Lælioides fasciata, *Moore, Lep. Ceyl.* ii, p. 84, pl. 110, fig. 6; *C. & S.* no. 886.
Procodeca testacea, *Moore, P. Z. S.* 1872, p. 574 (nom. præocc.); *C. & S.* no. 1069.

♂. Head, thorax, and fore wing reddish chestnut, the last irrorated with grey scales; the interno-median interspace and outer area suffused with grey; the black spot between veins 3 and 4 displaced towards outer margin. Abdomen and hind wing paler.

♀ with the fore wing less suffused with grey.

In the form *rubripennis*, from Burma, the spots are indistinct and the hind wing nearly white; in *fasciata*, from Ceylon, the spots are more prominent and the hind wing fuscous.

Hab. Ganjam; Burma; Ceylon. *Exp.*, ♂ 36, ♀ 40 millim.

980. **Lælia umbrina,** *Moore, P. Z. S.* 1888, p. 398; *Butl. Ill. Het.* vii, pl. 123, fig. 8.

♂. Differs from *rubripennis* in the head, thorax, fore wing, and legs being dark reddish brown; palpi ochreous; abdomen and hind wing dark fuscous brown.

Hab. Kulu. *Exp.* 39 millim.

981. **Lælia cardinalis,** *Hmpsn. Ill. Het.* ix, ined., pl. 158, figs. 29, 30.

♂. Differs from *umbrina* in the head, thorax, legs, and fore wing being brilliant scarlet or bright red-brown; hind wing black; abdomen black with a reddish tinge.

Hab. Ceylon. *Exp.* 32–38 millim.

982. **Lælia exclamationis,** *Koll. Hügel's Kaschmir,* iv, p. 469; *Butl. Ill. Het.* vii, pl. 138, fig. 6 (larva); *C. & S.* no. 782.
Lacida rotundata, *Wlk. Cat.* iv, p. 802; *Moore, Lep. Ceyl.* ii, pl. 110, figs. 4, 4 *a*; *C. & S.* no. 883.
Cycnia rubida, *Wlk. Cat.* xxxi, p. 297; *C. & S.* no. 851.
Lymantria disjuncta, *Wlk. Cat.* xxxii, p. 366.
Repena cervina, *Wlk. Cat.* iv, p. 800; *C. & S.* nos. 871, 1075.

♂. Red-brown or pinkish brown; fore wing irrorated with black scales; a black line on discocellulars, often extending round the angle of cell to vein 2, the veins crossing it pale.

♀ rather paler and redder.

Fig. 305.—*Lælia exclamationis,* ♂. 1/1.

Larva brown, with tufts of long grey and brown hair; dorsal tuft of short brown hair on 3rd to 6th somites; a subdorsal series of very short orange tufts, three to each somite; a lateral pale line.

Hab. N.W. Himalayas; Sikhim; throughout India and Ceylon. *Exp.*, ♂ 36, ♀ 44 millim.

983. **Lælia testacea,** *Wlk. Cat.* iii, p. 683; *C. & S.* no. 885.
Pulomacra juvenis, *Wlk. Cat.* v, p. 1099; *C. & S.* no. 1336.
Charnidas colon, *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, figs. 3, 19.
Lælia uniformis (♀), *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, fig. 2.

♂. Differs from *exclamationis* in having a blackish subapical patch to fore wing.

♀ of an ochreous tinge instead of red.

The typical form *testacea* is very pale, the female with scarcely a trace of dark irroration; the form *juvenis* has the fore wings longer in the male.

Hab. Sind; Bombay; Mhow; Nilgiris; Ceylon. *Exp.*, ♂ 40–42, ♀ 40–48 millim.

984. **Lælia litura**, *Wlk. Cat.* iv, p. 797; *C. & S.* no. 880.

♂. Differs from *exclamationis* in being dark fuscous brown; the head, collar, and legs ochreous.

Hab. Kulu; Nepal; Sikhim; Tenasserim. *Exp.* 30–36 millim.

985. **Lælia venosa**, *Moore, P. Z. S.* 1877, p. 601, pl. lix, fig. 1; *C. & S.* no. 892.

♂. Pale brown; abdomen with an orange tinge; fore wing with the veins paler.

♀ paler.

Hab. Sikhim; S. Andamans. *Exp.*, ♂ 40, ♀ 54 millim.

986. **Lælia atestacea.**

Harapa testacea, *Moore, Lep. Atk.* p. 47, pl. 2, fig. 15 (nom. præocc.); *C. & S.* no. 1077.

♂. Fore wing rather more produced than in that sex of the preceding species. Head and thorax pale yellowish brown; abdomen brownish yellow. Fore wing uniform pale yellowish brown; hind wing paler.

Hab. Sikhim. *Exp.* 56 millim.

Sect. II. Female with aborted wings.

987. **Lælia heterogyna**, n. sp.

♂. Dull brown; clothed with long hair-like scales; fore wing with the discocellulars smoky black; some smoky suffusion between the bases of veins 2 to 4, and an indistinct patch beyond upper angle of cell.

♀. Ochreous, with aborted wings.

A development of *L. testacea.*

Hab. Dras, Kashmir (*Leech*). *Exp.* ♂ 44 millim. Type in coll. Leech.

Genus **PANTANA**.

Pantana, *Wlk. Cat.* iv, p. 819 (1855).
Birnara, *Butl. Trans. Linn. Soc.* (2) i, 1879, p. 560.

Type, *P. visum*, Hübn.

Range. China; N.E. India; Burma; Malacca; Java.

Differs from *Orgyia* in the palpi being slender and naked; the legs not so hairy; the female with fully developed wings and bipectinated antennæ with short branches.

988. **Pantana bicolor,** *Wlk. Cat.* iv, p. 787; *C. & S.* no. 873.
Genusa delineata, *Wlk. Cat.* iv, p. 818; *Butl. Ill. Het.* v, pl. 89, fig. 8; *C. & S.* no. 896.
Genusa circumdata, *Wlk. Cat.* iv, p. 819; *C. & S.* no. 894.
Genusa comparata, *Wlk. Cat.* xxxii, p. 340.
Stilpnotia sordida, *Wlk. Cat.* vii, p. 1732; *C. & S.* no. 1074.

♂. Head, collar, and palpi orange; thorax and basal segments of abdomen white, the terminal segments orange. Wings yellowish white; fore wing with a slight fuscous suffusion in the interspaces; hind wing with the outer area broadly and irregularly suffused with fuscous, leaving the veins white. Underside with the greater part of fore wing and a patch on disk of hind wing suffused with fuscous.

♀ with hardly a trace of fuscous suffusion.

The Burmese form of the male is pure white, with no black suffusion on hind wing; the female pure white.

Hab. Throughout N.E. India; Burma. *Exp.* 48 millim.

989. **Pantana visum,** *Hübn. Zutr.* iii, p. 33.
Pantana dispar, *Wlk. Cat.* iv, p. 820; *C. & S.* no. 1076.

♂. Head orange-yellow; thorax pale brown; abdomen whitish. Fore wing yellowish white; the costal half of wing suffused with pale red and brown, leaving the centre of costa and discocellulars

Fig. 306.—*Pantana visum,* ♂. $\frac{1}{1}$.

pale; two dark patches below the angle of cell. Hind wing pure white. Underside with the costal half of fore wing orange except the apical black area.

Hab. Throughout Burma. *Exp.* 44 millim.

990. **Pantana terminata,** *Wlk. Cat.* xxxii, p. 340; *C. & S.* no. 898.

♂. Head, thorax, and abdomen pale fuscous. Fore wing with the basal area white or suffused with fuscous; the apical area smoky black; the oblique medial white band with three black spots below the median nervure. Hind wing pure white or whitish, with the apical area black; the inner area suffused with brown.

Hab. Karen Hills; Beeling; E. Pegu. *Exp.* 40 millim.

991. **Pantana interjecta**, *Swinh. Trans. Ent. Soc.* 1891, p. 478, pl. xix, fig. 2.

♂. Differs from *terminata* in being darker, the head, palpi, and coxæ of fore legs bright fulvous. Fore wing with the basal area much darker; the apical area blacker; no black spots below median nervure. Hind wing either wholly suffused with fuscous, except a white patch on the outer half of costa, the black patch being placed below the apex, or white with the apical area black.

Hab. Sikhim; Khásis. *Exp.* 46 millim.

992. **Pantana albifascia**, *Wlk. Cat.* xxxii, p. 325; *C. & S.* no. 872.
Orgyia subfascia, *Moore, P. Z. S.* 1865, p. 803.

♂. Differs from *interjecta* in the whole hind wing being dark brown. In the form *subfascia* the band of the fore wing is more or less suffused with fuscous.

Hab. Sikhim. *Exp.* 42 millim.

Genus **THIACIDAS**.

Thiacidas, *Wlk. Cat.* v, p. 1027 (1855).
Casama, *Wlk. Cat.* xxxii, p. 611 (1865).

Type, *T. postica*, Wlk.

Range. Throughout India, Ceylon, and Burma.

Palpi porrect and slender, the 2nd joint fringed with hair. Legs naked, the spurs rather short. Fore wing longer and narrower than in the preceding genera; the neuration similar. Hind wing with veins 3 and 4 usually stalked and 6 and 7 usually from cell.

SECT. I. (*Thiacidas*). Male with the proximal two-thirds of antennæ pectinated, the distal part serrate.

993. **Thiacidas postica**, *Wlk. Cat.* v, p. 1028; *Swinh. P. Z. S.* 1885, pl. 21, figs. 1, 1 *a*, 2; *C. & S.* no. 1060.
Drymonia denotata, *Wlk. Cat.* xxxii, p. 414; *C. & S.* no. 1165.
Heterocampa nigroscripta, *Wlk. Cat.* xxxii, p. 423.
Cnethocampa curvata, *Wlk. Cat.* xxxii, p. 429; *C. & S.* no. 1046.
Cnethocampa basifurca, *Wlk. Cat.* xxxii, p. 430; *C. & S.* no. 1041.

Fig. 307.—*Thiacidas postica*, ♂ 1/1.

Head, thorax, and abdomen greyish brown. Fore wing greyish brown, with obliquely curved subbasal and antemedial black double lines angled below median nervure; a double postmedial line

excurved round end of cell and bent inwards below the cell with some streaks from it to outer margin. Hind wing with an indistinct curved postmedial line; a brown patch at anal angle with a dark streak on it; some strigæ on margin.

Hab. Throughout India and Burma. *Exp.*, ♂ 38, ♀ 44 millim.

SECT. II. (*Casama*). Male with antennæ bipectinated to tips, the branches long.

994. **Thiacidas vilis**, *Wlk. Cat.* xxxii, p. 348; *Hmpsn. Ill. Het.* viii, pl. 143, figs. 2, 9; *C. & S.* no. 956.
Casama indeterminata, *Wlk. Cat.* xxxii, p. 611; *C. & S.* no. 1779.

Head, thorax, abdomen, and fore wing grey, irrorated with brown scales; the last with an indistinct dark mark on the discocellulars and a series of marginal dark specks. Hind wing white.

Hab. Nilgiris; Ceylon. *Exp.*, ♂ 26, ♀ 32 millim.

Genus CIFUNA.

Cifuna, *Wlk. Cat.* v. p. 1172 (1855).
Baryaza, *Moore, Lep. Atk.* p. 45 (1879).

Type, *C. locuples*, Wlk.

Range. Japan; Sikhim; Khási and Nága Hills.

Palpi long, stout, and obliquely porrect. Antennæ bipectinated, the median branches long in male. Legs hairy. Fore wing rather short, the outer margin nearly straight; neuration as in preceding genera. Hind wing with veins 3 and 4 from angle of cell or stalked; 5 from above the angle; 6 and 7 from upper angle.

995. **Cifuna locuples**, *Wlk. Cat.* v, p. 1173; *Butl. Ill. Het.* ii, pl. 27, fig. 6; *C. & S.* no. 1330.

♂. Head, thorax, and fore wing reddish chestnut, the last with an indistinct broad irregular antemedial band; a waved line on each side of the discocellulars; a broad irregular postmedial band;

Fig. 308.—*Cifuna locuples*, ♂. 1/1.

a series of irregular marginal marks; all these markings with slight purplish edging. Abdomen and hind wing ochreous.

♀ uniformly much darker.

Hab. Japan; Khásis; Nágas. *Exp.*, ♂ 40, ♀ 52 millim.

996. **Cifuna cervina**, *Moore, Lep. Atk.* p. 45, pl. 3, fig. 1; *C. & S.* no. 1062.

♂. Differs from *locuples* in being dull dark brown; fore wing with a purplish tinge; a black lunule at end of cell; the line inwardly edging the postmedial band nearly straight; no marginal marks or purplish edging to the markings. Palpi and legs blackish.
Hab. Sikhim. *Exp.* 54 millim.

Genus DASYCHIRA.

Dasychira, *Steph. Ill. Brit. Ent., Haust.* ii, p. 58 (1829).
Olene, *Hübn. Zutr.* 2, p. 19, non descr. (1823).
Nioda, *Wlk. Cat.* v, p. 1069 (1855).
Rilia, *Wlk. Cat.* v, p. 1075 (1855).
Psalis, *Hübn. Zutr.* 2, p. 19, non descr. (1827).
Arestha, *Wlk. Cat.* iv, p. 805 (1855).
Anchyneura, *Feld. Sitzungsb. Akad. Wiss. Wien*, xliii, p. 331 (1861).
Cadrusia, *Moore, Lep. Atk.* p. 54 (1879).

Type, *D. pudibunda*, Linn., from Europe.
Range. Europe; Africa; Madagascar; Japan; China; throughout India, Ceylon, and Burma; Java; Australia.
Palpi porrect, the 2nd joint heavily fringed with hair; antennæ with the branches long in male, short in female; legs hairy. Fore wing with the outer margin oblique; neuration as in preceding genera. Hind wing with veins 3, 4, 5 from close to angle of cell; 6 and 7 stalked.

SECT. I. (*Dasychira*). Fore wing of female not produced at apex, the outer margin evenly curved.

A. *Abdomen clothed with long hair and without dorsal crests.*

997. **Dasychira complicata**, *Wlk. Cat.* xxxii, p. 362; *Butl. Ill. Het.* v, pl. 91, figs. 4, 5; *C. & S.* no. 998.
Trisula pustulifera, *Wlk. Cat.* xxxii, p. 576.

♂. Head and collar whitish; palpi black at sides; the branches of antennæ red-brown; thorax brown, with black spots behind the collar; abdomen orange, the vertex black, the anal tuft and lateral fringe white. Fore wing red-brown; a subbasal waved black line with a maculate band between it and the double antemedial lines; reniform spot edged with black; a waved and curved postmedial line with a maculate band beyond it; a waved submarginal line; all these markings slightly outlined with white; cilia chequered pale and black. Hind wing yellowish white; the basal inner area tinged with orange; a dark spot at end of cell and postmedial band; cilia spotted with black.
♀ paler.
Hab. Sikhim. *Exp.*, ♂ 58, ♀ 86 millim.

B. *Abdomen smoothly scaled.*

a. *Female with the branches of antennæ long; abdomen without dorsal crests.*

998. **Dasychira lineata,** *Wlk. Cat.* iv, p. 875; *Butl. Ill. Het.* v, pl. 91, fig. 3; *C. & S.* no. 1023.

♀. White. Fore wing with a fine antemedial black line angled on median nervure; indistinct dentate postmedial and submarginal lines, the postmedial line dividing and outlining the discocellulars; a marginal series of specks to both wings.

Hab. Sikhim; Sylhet; E. Pegu. *Exp.* 85 millim.

b. *Female with the branches of antennæ short; abdomen with dorsal crests on anterior segments.*

999. **Dasychira horsfieldi,** *Saund. Trans. Ent. Soc.* n. s. i, 1851, p. 162; *Moore, Lep. E. I. Co.* pl. xiv, figs. 13, 13 *a* (larva).
Dasychira grotei, *Moore, Lep. E. I. Co.* p. 338; *C. & S.* no. 982.
Dasychira kausalia, *Moore, P. Z. S.* 1879, p. 401; *C. & S.* no. 983.
Dasychira arga, *Moore, Lep. E. I. Co.* p. 339.
Dasychira nilgirica, *Hmpsn. Ill. Het.* viii, p. 58, pl. 141, figs. 13, 14.

Fig. 309.—*Dasychira horsfieldi,* ♂. $\frac{1}{1}$.

♂. Head and thorax whitish grey, the branches of antennæ red-brown; abdomen orange with the anal tuft grey; legs spotted with black. Fore wing greyish white, irrorated with dark scales and slightly suffused with brown; a dentate subbasal black line; two medial lines, the inner nearly straight, the outer waved; the reniform spot with dark outline; a waved postmedial line, bent outwards near inner margin; an irregularly dentate submarginal line. Hind wing pale; the inner area orange; a more or less prominent dark spot at end of cell; the outer area generally suffused with fuscous. Underside with prominent cell-spots to both wings.

♀. Head, thorax, and fore wing white, slightly powdered with grey; the last with indistinct diffused antemedial, postmedial, and submarginal lines. Abdomen and hind wing pure white.

Larva yellow, with tufts of long yellow hairs; 4th to 7th and 11th

somites with thick dorsal shorter tufts; a black dorsal patch between 4th and 5th somites.

Hab. Throughout India, Ceylon and Burma; Java. *Exp.*, ♂ 46, ♀ 70–86 millim.

1000. **Dasychira thwaitesi,** *Moore, Lep. Ceyl.* ii, p. 98, pl. 116, figs. 1, 1 *a*, *b* (larva); *C. & S.* no. 991.
Dasychira pudica, *Moore, Lep. Ceyl.* iii, p. 538.

♂. Differs from *horsfieldi* in the head and thorax being whiter. Fore wing pure white; the two postmedial lines nearer the margin; the submarginal line absent; abdomen and hind wing pale brown without any orange.

♀. White, very slightly irrorated with black; medial and postmedial dark streaks from the costa of fore wing; the lines very faint; hind wing pure white.

Hab. Ceylon. *Exp.*, ♂ 40, ♀ 50 millim.

1001. **Dasychira albescens,** *Moore, Lep. Atk.* p. 59, pl. iii, fig. 2; *C. & S.* no. 975.

♂. Palpi black at sides; branches of antennæ red-brown; head, thorax, and abdomen white, slightly irrorated with grey. Fore wing silky white, slightly irrorated with grey; a tuft of raised scales at end of cell; almost obsolete ante- and postmedial waved lines. Hind wing white, with an almost obsolete dark spot at end of cell and curved submarginal band forming a patch near anal angle.

♀ with the palpi white; the fore wing thickly irrorated with fuscous, and with better defined antemedial, postmedial, and submarginal lines.

Hab. Sikhim. *Exp.*, ♂ 58, ♀ 68 millim.

1002. **Dasychira cinctata,** *Moore, Lep. Atk.* p. 59; *C. & S.* no. 978.

♂. Differs from *albescens* in the thorax being tinged with brown, the abdomen ringed with black. Fore wing with antemedial and postmedial black patches on the costa; the antemedial, postmedial, and submarginal waved lines more prominent. Hind wing with a dark mark at end of cell, a submarginal band, and marginal line.

♀. The thorax not tinged with brown; fore wing more irrorated with fuscous.

Hab. Sikhim. *Exp.*, ♂ 62, ♀ 82 millim.

1003. **Dasychira strigata,** *Moore, Lep. Atk.* p. 58; *C. & S.* no. 989.
Dasychira niveosparsa, *Butl. Ill. Het.* v, p. 59, pl. 91, fig. 7; *C. & S.* no. 987.

Head and thorax iron-grey; abdomen slightly tinged with yellow. Fore wing dark iron-grey, slightly tinged with brown; an indistinct angulated subbasal line; a double antemedial waved line; the reniform with dark outline; a double waved postmedial line

and single submarginal line. Hind wing fuscous, the inner area tinged with orange; an indistinct dark spot at end of cell; a postmedial band and marginal line.

Hab. Simla; Sikhim. *Exp.*, ♂ 62, ♀ 73 millim.

1004. **Dasychira varia,** *Wlk. Cat.* iv, p. 868; *C. & S.* no. 992.
Dasychira maruta, *Moore, Lep. E. I. Co.* p. 339; *Butl. Ill. Het.* v, pl. 91, fig. 6; *C. & S.* no. 984.

♀. Head, thorax, and abdomen brownish grey; palpi black at sides. Fore wing brownish grey, with a nearly erect subbasal dark line; an indistinct dark forked antemedial line; a dark mark on discocellulars; a doubly curved postmedial black line; a submarginal lunulate line. Hind wing pale fuscous; traces of a dark mark on discocellulars and postmedial band; a marginal dark line.

Hab. Sikhim. *Exp.* 70 millim.

*1005. **Dasychira perdix,** *Moore, Lep. Atk.* p. 58, pl. iii, fig. 3; *C. & S.* no. 988.

♂. Grey; thorax speckled with brown; antennæ, sides of palpi, and legs pale ferruginous. Both wings with the veins and interspaces irrorated with prominent black-brown scales, forming on the fore wing indistinct sinuous bands and patches; a suffused brown patch at end of cell, and a patch on centre of inner margin; a submarginal line; hind wing with the inner margin ferruginous grey; a submarginal band.

Hab. Sikhim. *Exp.* 62 millim.

*1006. **Dasychira brunnescens,** *Moore, Lep. Atk.* p. 57; *C. & S.* no. 977.

♂. Head, thorax, and legs grey irrorated with brown; branches of antennæ red-brown; abdomen pale brown. Fore wing greyish white irrorated with brown scales; a waved basal, two subbasal, and one medial line; a submarginal lunulate pale-bordered line; a line on discocellulars. Hind wing greyish brown, the outer area palest; the veins and a submarginal band darker.

♀ with the hind wing much paler.

Hab. Sikhim. *Exp.*, ♂ 60, ♀ 70 millim.

1007. **Dasychira chloroptera,** n. sp.

♂. Head and thorax dark green; abdomen black-brown; the first three segments with black crests; anal tuft fulvous yellow. Fore wing dark green, with indistinct waved medial, postmedial, submarginal, and marginal lines. Hind wing black, with broad irregular bright yellow marginal band. Underside ochreous, the basal area suffused with black; a black spot at end of cell and waved postmedial line.

Hab. Khásis. *Exp.* 56 millim. Type in coll. Elwes.

1008. **Dasychira virescens**, *Moore, Lep. Atk.* p. 54, pl. iii, fig. 16; *C. & S.* no. 1079.

♀. Head, thorax, and fore wing paler green; abdomen orange, sometimes greenish above. Fore wing with the reniform spot more prominent and filled in with grey. Hind wing orange: a large black spot at end of cell and submarginal spots towards apex and anal angle; a sinuous marginal line. Underside without black suffusion.

Hab. Sikhim. *Exp.* 76 millim.

1009. **Dasychira flavimacula**, *Moore, P. Z. S.* 1865, p. 804; *C. & S.* no. 981.

♂. Head and thorax dark brown; abdomen paler, with the dark dorsal tuft large. Fore wing dark purplish brown; a waved sub-basal black line with some dark and red-brown marks beyond it; a waved antemedial black line; a dark lunule on discocellulars bordering a brown patch; a waved postmedial line bent inwards below the angle of cell, and with a series of dark and red-brown spots beyond it; a short oblique white line near outer angle. Hind wing fuscous. Underside with a cell-spot and postmedial line to both wings.

♀ paler, with the markings more prominent.

Hab. Sikhim. *Exp.*, ♂ 48, ♀ 60 millim.

1110. **Dasychira olearia**, *Swinh. P. Z. S.* 1885, p. 297, pl. 20, figs. 14, 15; *C. & S.* no. 1038.

♂. Head, thorax, and abdomen smoky black; collar tinged with chestnut. Fore wing dark purplish brown, with some ochreous suffusion at base, near inner margin, and towards apex; dark streaks on the veins and interspaces of the apical area; the reniform spot ochreous with dark outline; cilia with pale streaks at the veins.

♀. Collar dark. Fore wing with a well-marked submarginal red-brown band not reaching the costa and outwardly edged with ochreous; a waved submarginal line.

Hab. Poona; Nilgiri plateau. *Exp.*, ♂ 36, ♀ 43 millim.

1011. **Dasychira bhana**, *Moore, P. Z. S.* 1865, p 804; *C. & S.* no. 976.
Dasychira nigritula, *Wlk. Cat.* xxxii, p. 360; *C. & S.* no. 986.
Dasychira tenebrosa, *Wlk. Cat.* xxxii, p. 361; *C. & S.* no. 990.
Mardara feminula, *Hmpsn. Ill. Het.* viii, p. 58, pl. 141, figs. 1, 7.

♂. Head, thorax, and abdomen dark brown. Fore wing dark brown, with about six very indistinct waved dark lines slightly outlined with purplish grey; a submarginal series of dark lunules; an indistinct dark lunule at end of cell, in some specimens with a fulvous spot beyond it. Hind wing fuscous brown.

♀ similar but paler.

In the Nilgiri race *feminula* the male has an ochreous tinge on fore wing, and no purplish-grey edging to the lines; the female is

wholly purplish grey; the fore wing irrorated with dark specks with waved ante- and postmedial brown lines which meet at inner margin; a brown spot at end of cell and an irregular submarginal brown band; the hind wing pale grey.

Hab. Sikhim; Nilgiri plateau. *Exp.*, ♂ 43–52, ♀ 47–52 millim.

1012. **Dasychira mœrens**, *Feld. Reis. Nov.* pl. 99, fig. 4 (♀); *Hmpsn. Ill. Het.* ix, pl. 160, fig. 1 (♂), pl. 176, fig. 1 (larva); *C. & S.* no. 985.

♂. Head, thorax, abdomen, and fore wing dark olive-brown; the last with double subbasal, antemedial, and postmedial waved and angulated lines; submarginal and marginal series of indistinct lunulate marks; the reniform with indistinct dark outline. Hind wing black-brown, the cilia red-brown. Underside red-brown variegated with dark brown.

♀ much paler, the lines of the fore wing outlined with purplish grey.

Larva dark brown with a reddish lateral line; two long dark brown dorsal tufts on 4th and 11th somites, and two shorter pale brown tufts on 5th, 6th, and 7th somites.

Hab. Ceylon. *Exp.*, ♂ 42, ♀ 60 millim.

SECT. II. (*Olene*). Fore wing of female produced at apex, the outer margin excised; abdomen with dorsal crests.

1013. **Dasychira mendosa**, *Hübn. Zutr.* ii, p. 19, figs. 293, 294; *Moore, Lep. Ceyl.* ii, pl. 115, figs. 4, 4 *a*, *b* (larva); *C. & S.* no. 1037.
Olene basivitta, *Wlk. Cat.* xxxii, p. 436; *C. & S.* no. 1035.
Nioda fusiformis, *Wlk. Cat.* v, p. 1070; *C. & S.* no. 1036.
Rilia lanceolata, *Wlk. Cat.* v, p. 1075.
Antipha basalis, *Wlk. Cat.* iv, p. 806; *C. & S.* no. 1040.
Dasychira sawanta, *Moore, Lep. E. I. Co.* p. 340.
Dasychira divisa, *Wlk. Cat.* xxxii, p. 363.

♂. Head, thorax, and abdomen pale brown, the abdominal tuft dark. Fore wing with a subbasal incurved dark line; waved ante- and postmedial lines, the latter recurved beyond end of cell and incurved below the end; a waved submarginal line. Hind wing pale, the outer area slightly suffused with brown.

In the form *mendosa = fusiformis* the fore wing is nearly uniform brown with a pale round patch outside the subbasal line: in *divisa* the whole costal half of the fore wing is suffused with white except a patch on the costa before the apex: in *basalis* the subbasal patch is dark brown and elongate; there is a pale line before the antemedial line and on each side of the discocellulars, and some grey near apex and outer angle.

♀. The subbasal line of fore wing almost obsolete; the waved dark lines prominent; the reniform pale brown with dark outline; a diffused dark fascia from the base to outer margin, leaving the costa and inner margin pale, in some specimens interrupted by the area between the ante- and postmedial lines being pale.

Larva blackish; the head striped with red; the 1st somite with a white band crossed by red stripes and with tufts of long black hair; a series of red lateral spots with a white line below them; dorsal tufts of bright yellow hair rising from a dark patch on 4th to 7th somites; a lateral tuft of black hair from 5th somite; 8th to 11th somites with subdorsal red spots; 11th somite with a dorsal tuft of long black hair; legs scarlet; prolegs spotted with scarlet.

Another form is paler, with the whole head and a dorsal blotch on 1st somite scarlet; the dorsal tufts on 4th to 7th somites grey.

Hab. Throughout India, Ceylon, and Burma; Java; Australia. *Exp.*, ♂ 34–42, ♀ 46–54 millim.

1014. **Dasychira inclusa**, *Wlk. Cat.* vii, p. 1737; *Moore, Lep. E. I. Co.* pl. xv, figs. 2, 2 *a* (larva).
Dasychira dalbergiæ, *Moore, P. Z. S.* 1888, p. 399; *Butl. Ill. Het.* vii, pl. 123, figs. 9, 10, 11, pl. 138, fig. 12 (larva); *C. & S.* no. 979 A.

♂. Differs from *mendosa* in the head, thorax, and abdomen being darker brown. Fore wing rather broader and shorter and more uniform dull brown; the lines very indistinct, and with an indistinct waved brown band beyond the postmedial line. Hind wing brownish fuscous.

One specimen has the fore wing slightly irrorated with white and a large white subbasal round spot.

♀. The fore wing with a pale brown subbasal mark; some pale brown along inner margin, on discocellulars, and beyond the postmedial line. Hind wing paler.

Larva of male dark brown, with lateral tufts of long hair; head red-brown; two white dorsal lines on 4th somite and dorsal tufts of silky reddish hair on 4th to 7th somites.

Larva of female with the dorsal tufts dark brown; a subdorsal white stripe and crimson dorsal spots on 9th and 10th somites.

Hab. N.W. Himalayas; Poona; Java. *Exp.*, ♂ 40, ♀ 52 millim.

Sect. III. (*Psalis*). Fore wing of male produced and falcate at apex; abdomen with no dorsal crests.

1015. **Dasychira securis**, *Hübn. Zutr.* ii, p. 19, figs. 291, 292; *Moore, Lep. Ceyl.* ii, pl. 115, figs. 1, 1 *a* (larva); *C. & S.* no. 1090.
Arestha antica, *Wlk. Cat.* iv, p. 805.
Rigema falcata, *Wlk. Cat.* xxxii, p. 437.
Rigema tacta, *Wlk. Cat.* xxxii, p. 438.
Anticyra approximata, *Wlk. Cat.* xxxii, p. 440.

♂. Head and thorax brownish ochreous; abdomen ochreous white. Fore wing ochreous, the inner half irrorated with dark scales; the central area from base to outer margin brownish suffused with white. Hind wing ochreous white.

Larva black, with ochreous dorsal and black lateral hairs; long anterior and posterior tufts; thick dorsal tufts of rufous hair on 4th to 7th somites, and smaller tufts on 9th and 10th somites; subdorsal and lateral series of greenish spots and lateral greenish line; head and legs crimson.

Hab. Throughout India, Ceylon, and Burma; Java; Australia. *Exp.*, ♂ 34, ♀ 50 millim.

Genus MARDARA.

Mardara, *Wlk. Cat.* xxxii, p. 402 (1865).
Mahoba, *Moore, Lep. Atk.* p. 52 (1879).

Type, *M. caligramma*, Wlk.

Range. Simla; Sikhim; Nágas; Manipur.

Palpi porrect and rather slender; antennæ with the branches long in male, shorter in female; legs with the spurs long. Shape and neuration as in *Dasychira*, except that the fore wing is more rounded and vein 10 anastomoses with 7, 8, 9 to form the areole; hind wing with veins 6 and 7 from cell.

SECT. I. Palpi reaching beyond the frons; fore wing with vein 10 given off shortly after areole.

1016. **Mardara plagidotata**, *Wlk. Cat.* xxv, p. 1483; *Moore, Lep. Atk.* pl. iii, fig. 6; *C. & S.* no. 1058.

Head and collar black powdered with white; palpi orange; antennæ black; thorax and abdomen white powdered with fuscous; abdomen with the terminal segments orange. Fore wing white

Fig. 310.—*Mardara plagidotata*, ♀. ½.

hi ckly irrorated with fuscous; a brown lunule at end of cell; brown patches on the costa before the middle, at middle, and near apex; a brown band on outer margin from apex narrowing to vein 2.

Hind wing white, with a round black spot at end of cell; a submarginal patch on veins 2 and 3; a patch on costa before the apex and on outer margin below it; outer area slightly irrorated with black.

Hab. Sikhim; Nágas. *Exp.*, ♂ 66, ♀ 72 millim.

*1017. **Mardara irrorata**, *Moore, Lep. Atk.* p. 52; *C. & S.* no. 1057.

♂. Head and thorax pale ochreous; abdomen brighter; antennæ brown; legs speckled with brown. Fore wing ochreous white, sparsely irrorated with red-brown scales; a pale spot at end of cell enclosing a brown line on discocellulars which is flecked with yellow. Hind wing ochreous white, the outer area sparsely irrorated with red-brown scales.

Hab. Sikhim. *Exp.* 57 millim.

1018. **Mardara caligramma**, *Wlk. Cat.* xxxii, p. 204; *C. & S.* no. 997.

♂. Head and thorax clothed with dark brown and yellow hairs; fulvous-yellow tufts on metathorax; abdomen fuscous, the segments fringed with yellow; the anal tuft orange. Fore wing dark brown; the veins yellowish; a subbasal oblique yellow line; an antemedial highly angled line conjoined to a doubly angled postmedial line which touches a waved submarginal line, thus forming large reticulations; a yellow spot on discocellulars. Hind wing smoky black; cilia of both wings ochreous.

Hab. Simla; Sikhim; Nágas. *Exp.*, ♂ 50, ♀ 58 millim.

SECT. II. Palpi not reaching beyond the frons; fore wing with vein 10 given off towards apex.

1019. **Mardara albostriata**, n. sp.

♂. Head and thorax red-brown; abdomen black, the segments fringed with white, the anal tuft orange. Fore wing red-brown; the veins streaked with white; a basal white patch with a dark spot on it; a subbasal white line; an angulated antemedial line with a streak in the interno-median interspace from it to an excurved postmedial line which nearly touches an incurved submarginal line. Hind wing white, with some black spots near apex and on margin; two large spots near anal angle. Undersides of both wings white, with the apices brown.

Hab. Manipur; Nágas (*Doherty*). *Exp.* 60 millim. Type in coll. Elwes.

Genus **NUMENES**.

Numenes, *Wlk. Cat.* iii, p. 662 (1855).
Pseudomesa, *Wlk. Cat.* iv, p. 923 (1855).

Type, *N. siletti*, Wlk.
Range. Sikhim; Bhutan; Assam; Burma; Java.

Palpi obliquely upturned, the first two joints thickly fringed with hair. Antennæ bipectinate in both sexes, the branches long. Fore wing with the apex more produced and acute in the male than the female; neuration as in *Dasychira*; hind wing with veins 6 and 7 from cell.

1020. **Numenes siletti**, *Wlk. Cat.* iii, p. 663; *C. & S.* no. 964.
Pseudomesa quadriplagiata, *Wlk. Cat.* iv, p. 923; *Butl. Ill. Het.* v, pl. 90, fig. 6; *C. & S.* no. 1031.

♂. Head, thorax, and abdomen dark brown, the last with the segments fringed with white. Wings dark brown; fore wing with an oblique white band from the centre of costa to near outer angle. Hind wing with a pale orange fascia from beyond the middle of cell to near outer margin.

♀. Head and thorax black; abdomen orange, with paired dorsal and ventral brown spots. Fore wing yellowish white; a broad black

Fig. 311.—*Numenes siletti*. 1/1.

fascia along inner margin met by oblique ante- and postmedial chocolate bands, the latter sometimes enclosing some white spots; cilia chocolate. Hind wing pale orange, with a black-brown spot towards apex and another towards anal angle, the former sometimes absent.

Hab. Sikhim; Assam; Burma. *Exp.*, ♂ 50, ♀ 53 millim.

1021. **Numenes patrana**, *Moore, Lep. E. I. Co.* p. 367; *C. & S.* no. 963.
Numenes partita, *Wlk. Cat.* xxxi, p. 290; *C. & S.* no. 962.

♂. Head and thorax red-brown; abdomen ochreous. Fore wing white; a basal dark red-brown patch with a spot on the costa beyond it; a broad medial Y-shaped band, with an oblique

stripe from the same point on the costa to centre of outer margin. Hind wing pale yellow, with a large fuscous spot towards outer angle.

♀. Fore wing pale pinkish brown; antemedial, medial, and subapical dark spots on the costa, and a **Y**-shaped or rounded spot on inner margin and one or two small spots at outer angle.

Hab. Sikhim; Bhutan; Bernardmyo. *Exp.*, ♂ 50, ♀ 76 millim.

Genus **PIDA**.

Pida, *Wlk. Cat.* xxxii, p. 399 (1865).
Locharna, *Moore, Lep. Atk.* p. 53 (1879).

Type, *P. apicalis*, Wlk.

Range. Sikhim; Khásis.

Palpi upturned, reaching above vertex of head; antennæ of male with the branches long, short in female; legs heavily fringed with hair. Shape and neuration as in *Dasychira*.

1022. **Pida apicalis**, *Wlk. Cat.* xxxii, p. 400; *Butl. Ill. Het.* v, pl. 89, fig. 15; *C. & S.* no. 960.

♂. Palpi black, fringed with orange. Head and thorax pale brown; abdomen blackish, with orange anal tuft. Fore wing

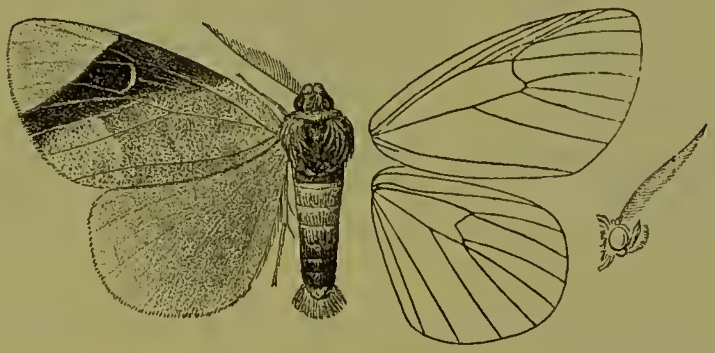

Fig. 312.—*Pida apicalis*, ♂. $\frac{1}{1}$.

pale brown irrorated with dark scales, which are thickly disposed towards the large apical yellow patch. Hind wing pale yellow, the inner area clothed with long brown hairs. Underside yellow.

Hab. Sikhim. *Exp.* 64 millim.

1023. **Pida strigipennis**, *Moore, Lep. Atk.* p. 53, pl. iii, fig. 11; *C. & S.* no. 1065.

Head and thorax dark and red-brown; antennæ black, with the sides of the shaft white; metathorax with a black tuft. Fore wing yellowish white, closely striated with black, the least striated area being the postmedial costal area; a black spot at end of cell.

Abdomen and hind wing orange-yellow, the latter with a few black striæ at apex. Some specimens are much paler than others.

Hab. Sikhim; Khásis. *Exp.*, ♂ 46, ♀ 55 millim.

Genus DAPLASA.

Daplasa, *Moore, Lep. Atk.* p. 51 (1879).

Type, *D. irrorata*, Moore.

Range. Sikhim.

Palpi very slender, short, and closely appressed to the frons; antennæ bipectinated in male. Fore wing with vein 6 from upper angle of cell; 9 arising from 10 and anastomosing with 7 and 8 to form the areole. Hind wing with veins 6 and 7 from angle of cell or stalked.

1024. **Daplasa variegata**, *Moore, Lep. Atk.* p. 48, pl. ii, fig. 24; *C. & S.* no. 955.

♂. Head, thorax, and abdomen white and olive-yellow. Fore wing with the basal area white, irrorated with black and olive-yellow scales forming ill-defined subbasal, antemedial, and medial bands; an indistinct forked postmedial band conjoined to the outer olive-yellow area irrorated with black scales. Hind wing white, a dark speck at end of cell, and broad marginal fuscous band not reaching anal angle. Underside of fore wing almost wholly suffused with black.

Fig. 313.
Daplasa variegata, ♂. 1/1.

Hab. Sikhim. *Exp.* 30 millim.

*1025. **Daplasa irrorata**, *Moore, Lep. Atk.* p. 52, pl. ii, fig. 17; *C. & S.* no. 1086.

♂. White; thorax brown-speckled; palpi and legs above bright yellow. Fore wing irrorated with minute brown scales, forming four indistinct oblique bands most distinct towards inner margin, the outer band extending to the apex. Abdomen and hind wing pale yellow.

Hab. Sikhim. *Exp.* 28 millim.

Genus HERACULA.

Heracula, *Moore, P. Z. S.* 1865, p. 804.

Type, *H. discivitta*, Moore.

Range. Sikhim.

Palpi upturned, reaching vertex of head, and heavily fringed

with hair; antennæ minutely ciliated in female. Fore wing broad, the apex rounded; vein 3 from before angle of cell; 5 from above angle; 6 from below upper angle; 7, 8, 9, 10 stalked, 10 being given off near the apex. Hind wing with veins 3, 4, 5 from near angle of cell; 6 and 7 from upper angle.

1026. **Heracula discivitta**, *Moore, P. Z. S.* 1865, p. 804, pl. 43, fig. 2; *C. & S.* no. 1063.

Head, collar, and prothorax dark brown; meso-, metathorax,

Fig. 314.—*Heracula discivitta*, ♀. ½.

and abdomen fulvous. Fore wing with a small basal dark brown mark on the costa; a large rounded basal fulvous patch with white edge; the medial area dark brown; the outer area fulvous, irrorated with black scales and edged inwardly by a curved white line. Hind wing fuscous brown; a broad marginal fulvous band with slightly waved inner edge.

Hab. Sikhim. *Exp.* 64 millim.

Genus LYMANTRIA.

Lymantria, *Hübn. Verz.* p. 160 (1818).
Liparis, *Ochs. Schmett. Eur.* iii, p. 186 (1810, præocc.).
Porthetria, *Hübn. Verz.* p. 160 (1818).
Enome, *Wlk. Cat.* iv, p. 883 (1855).
Nagunda, *Moore, Lep. Atk.* p. 53 (1879).
Barhona, *Moore, Lep. Atk.* p. 55 (1879).
Pegella, *Wlk. Cat.* xxxv, p. 1922 (1866).

Type, *L. monacha*, Linn., from Europe.

Range. Europe; Japan, and throughout India, Ceylon, and Burma; Java; Amboina; Celebes.

♂. Palpi porrect and hairy; antennæ with the branches long. Fore wing with veins 3, 4, 5 from close to angle of cell; 6 from below upper angle; 7, 8, 9, 10 stalked, 7 being given off further

from the cell than 10. Hind wing with veins 3, 4, 5 from close to angle of cell; 6 and 7 from upper angle.

♀. Antennæ serrate; wings either fully developed, or partially aborted, or reduced to scales.

SECT. I. (*Enome*). Female with scale-like wings; hind wing of male with the inner margin long; hind tibiæ with a minute terminal pair of spurs.

1027. **Lymantria incerta**, *Wlk. Cat.* iv, p. 880; *C. & S.* no. 1030.
Lymantria aryama, *Moore, Lep. E. I. Co.* p. 345; *C. & S.* no 1000.
Enome detersa, *Wlk. Cat.* xxxii, p. 365; *Swinh. P. Z. S.* 1885, pl. 21, figs. 3, 4; *C. & S.* no. 1029.
Lymantria costalis, *Wlk. Cat.* xxxii, p. 365; *C. & S.* no. 1006.

♂. Head, thorax, and abdomen red-brown; a crimson line behind the head; abdomen banded with crimson; legs spotted with black and marked with crimson. Fore wing greyish brown; a black subbasal line with some spots beyond it; an antemedial waved line; a spot at middle of cell and lunule at end of it; a diffused postmedial band and double waved postmedial line, the outer line more or less obsolescent. Hind wing brown, with an indistinct waved postmedial line; an elongate black mark near anal angle; cilia of both wings spotted with black.

The form *detersa* is pale and small (36 millim.).

♀. Head, thorax, and aborted wings whitish, the last with traces of markings; abdomen very large and brown.

Hab. Throughout S. India and Ceylon. *Exp.*, ♂ 36–54 millim.

1028. **Lymantria ampla**, *Wlk. Cat.* iv, p. 883; *Moore, Lep. E. I. Co.* pl. 9 *a*, fig. 4, and pl. 15, figs. 7, 7 *a*, 8, 8 *a* (larva); *C. & S.* no. 1028.

♂. Differs from *incerta* in being much yellower brown, and without crimson on head, abdomen, or legs.

♀. Head, thorax, and aborted wings white, spotted with black; abdomen blackish.

Larva brown, clothed with tufts of short hair and long hair from the anterior and posterior somites; male with a pale subdorsal line and dorsal and sublateral white spots; female with black dorsal spots and a white spot on 9th somite. Head and legs ochreous.

Hab. Throughout India, Ceylon, and Burma. *Exp.* 40 millim.

SECT. II. Female with less aborted wings; hind wings of male with inner margin short.

1029. **Lymantria obfuscata**, *Wlk. Cat.* xxxii, p. 367; *C. & S.* no. 1013.

♂. Differs from *ampla* in being greyish brown; fore wing with

the postmedial double lines more regular; hind wing with a dark lunule at end of cell and dark marginal band.

♀. Pale ochreous; a dark mark at end of cell of fore wing.

Larva pale brown, with short dorsal tufts of hair and long lateral tufts; a dark brown dorsal band, with pale lines down the centre and on each side.

Hab. N.W. Himalayas. *Exp.* ♂ 32 millim.

SECT. III. (*Lymantria*). Female with fully developed wings; hind tibiæ with two pairs of spurs.

1030. **Lymantria rhodina,** *Wlk. Cat.* xxxii, p. 366; *C. & S.* no. 1016.

♂. Head and thorax black, with a crimson line behind the head; abdomen crimson above. Fore wing smoky black; an indistinct black spot near end of cell and lunule on discocellulars; an indistinct postmedial waved line; cilia chequered brown and black. Hind wing whitish; the inner area tinged with crimson; a marginal fuscous band.

Hab. Sikhim; Khásis. *Exp.* 40 millim.

1031. **Lymantria obsoleta,** *Wlk. Cat.* iv, p. 880; *C. & S.* no. 1014.
Lymantria bhascara, *Moore, Lep. E. I. Co.* p. 345.
Lymantria vinacea, *Moore, P. Z. S.* 1879, p. 402.
Lymantria albolunulata, *Moore, P. Z. S.* 1879, p. 403; *C. & S.* no. 999.
Lymantria sobrina, *Moore, P. Z. S.* 1879, p. 402, pl. 33, fig. 5.

♂. Differs from *rhodina* in being brown; the abdomen slightly tinged with crimson. Fore wing irrorated with dark scales; indistinct double lunulate antemedial, medial, and postmedial lines; a black lunule at end of cell, but no spot in the cell. Hind wing pale brownish fuscous.

♀. Abdomen crimson, with a dark line on vertex and series of lateral black spots, the extremity brown; hind wing with the inner area suffused with crimson.

The form *albolunulata* from the N.W. Himalayas has the fore wing more irrorated with black; the postmedial lines with whitish lunules between them. A form from the Khásis has the ground-colour of fore wing paler; the hind wing nearly pure white, with a fuscous lunule at end of cell and irregular submarginal band; the cilia of both wings chequered black and pinkish.

In the form *sobrina* the lines of the fore wing are better defined; the hind wing with the inner margin tinged with pink; female with the abdomen yellowish.

Hab. China; Formosa; throughout India and Ceylon. *Exp.*, ♂ 42, ♀ 72 millim.

1032. **Lymantria ascetria**, *Hübn. Samml. exot. Schmett.* ii, *Phal. ver.* figs. 1–4; *C. & S.* no. 1001.
Lymantria pramestra, *Moore, Lep. E. I. Co.* p. 344, pl. ix *a*, fig. 3.

♂. Head and thorax white; antennæ black; a crimson line behind the head; tegulæ with a black spot; abdomen crimson, with fuscous spots on vertex and fringe to the segments. Fore wing white; two black spots at base and curved subbasal series; an antemedial waved fuscous line arising from a black spot on costa; a black speck near end of cell and lunule at end; two postmedial and one submarginal lunulate fuscous lines arising from black spots on the costa, the two former approaching each other towards inner margin; a series of marginal black spots. Hind wing white, with submarginal fuscous band and marginal series of spots.

♀. Head, thorax, and abdomen suffused with brown. Fore wing wholly suffused with brown, except the costal area and some white diffused along the lines; the markings considerably obscured. Hind wing often suffused with pale fuscous.

Hab. Moulmein; Tavoy; Java. *Exp.*, ♂ 46, ♀ 52–70 millim.

1033. **Lymantria concolor**, *Wlk. Cat.* iv, p. 876; *Butl. Ill. Het.* v, pl. 90, figs. 9, 10; *C. & S.* no. 1005.
Lymantria superans, *Wlk. Cat.* iv, p. 876; *C. & S.* no. 1019.
Lymantria carnecolor, *Moore, P. Z. S.* 1888, p. 399; *C. & S.* no. 1004 A.
Lymantria micans, *Feld. Reis. Nov.* pl. 99, fig. 2; *C. & S.* no. 1011.

♂. Differs from *ascetria* in the head and thorax being marked with black. Fore wing with the markings black; the antemedial line much more irregularly waved, and with a black streak in the cell beyond it; the two postmedial lines more lunulate and more or less connected by black blotches; the submarginal line also more irregular. Hind wing whitish or suffused with black, and with traces of a submarginal band.

♀ with the line behind the head yellow, and the ground-colour of abdomen yellow.

Some specimens have the head, thorax, and wings yellowish.

Larva brown, with tufts of brown and black hair; speckled and the back blotched with black; a conspicuous blotch on 2nd somite.

Hab. N.W. Himalayas; Sikhim; Sylhet; Nágas; Burma. *Exp.*, ♂ 56, ♀ 88 millim.

1034. **Lymantria similis**, *Moore, P. Z. S.* 1879, p. 402; *C. & S.* no. 1017.
Lymantria cara, *Butl. Ill. Het.* v, p. 56, pl. 90, fig. 13; *C. & S.* no. 1004.

♂. Differs from *ascetria* in the tegulæ being without black spots. Fore wing with the black patches on costa, from which

the waved lines arise, absent or large; a patch on inner margin at junction of the postmedial lines.

♀. With the tuft from basal joint of antennæ and line behind the head yellow; the abdomen crimson. Fore wing with the waved lines obsolescent; the black patches on costa and inner margin large, the first three on costa crossing the cell; a patch on centre of outer margin. Hind wing whitish, with fuscous submarginal band and marginal spots.

Hab. Sikhim; Bhutan; Assam; Calcutta; Borneo; Sumatra. *Exp.*, ♂ 52–58, ♀ 80 millim.

1035. **Lymantria todara**, *Moore, P. Z. S.* 1879, p. 402, pl. 33, fig. 6; *Hmpsn. Ill. Het.* viii, pl. 141, fig. 15 (♀); *C. & S.* no. 1020.

♂. Differs from *ascetria* in the line behind the head being yellow; two black spots on collar, and four on vertex of thorax; abdomen yellow. Fore wing with the postmedial waved lines single towards inner margin. Hind wing pale yellow, with a fuscous marginal band.

♀. Abdomen yellow and black. Fore wing as in *similis*, the black patches better defined, and the one on inner margin Y-shaped. Hind wing fuscous white, slightly tinged with yellow; the submarginal band almost obsolete.

Hab. Nilgiris; Ceylon. *Exp.*, ♂ 54, ♀ 88 millim.

1036. **Lymantria beatrix**, *Stoll, Cram. Pap. Exot.* v, p. 173, pl. 40, fig. 2; *C. & S.* no. 1003.

Lymantria marginata, *Wlk. Cat.* iv, p. 877.
Lymantria fuliginosa, *Moore, P. Z. S.* 1883, p. 17; *C. & S.* no. 1007.
Lymantria pusilla, *Feld. Reis. Nov.* pl. 99, fig. 3; *C. & S.* no. 1015.
Lymantria nigra, *Moore, P. Z. S.* 1888, p. 399; *C. & S.* no. 1012 A.
Porthetria umbrina, *Moore, Lep. Atk.* p. 55; *C. & S.* no. 1027.

♂. Head and thorax pale fuscous, marked and spotted with black; the line behind the head yellow; 3rd joint of palpus orange; two orange spots on mesothorax; abdomen orange, with a black line on vertex or short segmental bands; anal tuft black. Fore wing pale fuscous; an orange speck and three black spots at base; a broad subbasal black band; an antemedial line; a spot near end of cell and lunule on discocellulars; a medial band; two postmedial and one submarginal lunulate line; a marginal series of spots. Hind wing black, with yellow streaks on median and submedian nervures, or on the veins towards outer margin. Underside more or less suffused with yellow.

♀. Head and thorax white; collar outlined with black; thorax marked with black; the line behind the head and two spots on thorax yellow; abdomen yellow, with dorsal and lateral series of black spots. Fore wing white, with the black markings broad and more or less conjoined into blotches. Hind wing white, with a broad marginal black band, some specimens having white spots on it at centre; cilia white.

Hab. Throughout India and Ceylon; Java. *Exp.*, ♂ 54, ♀ 68 millim.

1037. **Lymantria grisea,** *Moore, Lep. Atk.* p. 55, pl. iii, fig. 5; *C. & S.* no. 1009.

♂. Head and thorax pale brown; abdomen whitish. Fore wing pale brown, with numerous indistinct dark lunulate lines, the most distinct being two irregular submarginal lines with white lunules between them; a dark mark on discocellulars. Hind wing yellowish white, with an indistinct marginal fuscous band.

Hab. Sikhim. *Exp.* 42 millim.

1038. **Lymantria mathura,** *Moore, P. Z. S.* 1865, p. 805; *C. & S.* no. 1026.

Lymantria aurora, *Butl. A. M. N. H.* (4) xx, p. 403.

♂. Differs from *beatrix* in the black spots on vertex of abdomen being small; the ground-colour of fore wing paler; the hind wing

Fig. 315.—*Lymantria mathura.* ½.

orange, with a black spot at end of cell and conjoined series of submarginal spots forming a curved band; some spots on centre of outer margin.

♀. Head and thorax white; frons fuscous; two black spots each on collar, meso- and metathorax; palpi, antennal tuft, and two spots on mesothorax crimson; abdomen crimson, with small black spots

on vertex, the terminal segments whitish; legs black and crimson. Fore wing white; some crimson and black basal spots; a subbasal line; an antemedial waved line joining at inner margin two postmedial lunulate lines, the space between which is often completely filled in with fuscous; a fuscous spot towards end of cell; some lunulate submarginal marks forming a more or less complete band; a marginal series of spots; costa and cilia crimson. Hind wing crimson, with a fuscous spot at end of cell; a submarginal maculate band and some spots on centre of margin.

The variety *aurora*, from Japan, where the typical form also occurs, is suffused with fuscous in both sexes.

Hab. Japan; N.W. Himalayas; Sikhim. *Exp.*, ♂ 40–54, ♀ 96–112 millim.

1039. **Lymantria viola**, *Swinh. P. Z. S.* 1889, p. 406.

♂. Differs from *mathura* in having the orange markings replaced by crimson, except that the abdomen is somewhat orange towards extremity. Fore wing with the ground-colour greyish.

♀. Differs from *mathura* in the black markings being somewhat reduced; the collar without spots, and the mesothorax with one black spot between the two crimson spots, and none behind them.

Hab. Bombay. *Exp.*, ♂ 50, ♀ 90 millim.

1040. **Lymantria grandis**, *Wlk. Cat.* iv, p. 874; *C. & S.* no. 1008.
Lymantria maculosa, *Wlk. Cat.* iv, p. 881.
Lymantria metarhoda, *Wlk. Trans. Ent. Soc.* (3) i, 1862, p. 78.

♂. Differs from *viola* in the shaft of antennæ and ground-colour of thorax and fore wing being pure white. Fore wing with all the bands reduced to well-separated spots; collar and thorax spotted as in *mathura*.

♀. Differs from *mathura* in the frons being black, the 2nd joint of palpus with a black spot.

Hab. Ceylon. *Exp.*, ♂ 58, ♀ 110 millim.

1041. **Lymantria rosea**, *Hmpsn. Ill. Het.* ix, ined., pl. 158, fig. 28.

♂. Differs from *grandis* in the palpi, head, thorax, and legs being black and white without any crimson. Fore wing with a prominent black lunule at end of cell; the antemedial and two postmedial lunulate lines not reduced to spots. Hind wing with a broad marginal smoky black band. Underside suffused with fuscous.

Hab. Margharita, near Sadiya, Assam; Ceylon. *Exp.* 54 millim.

1042. **Lymantria lepcha**, *Moore, Lep. Atk.* p. 54; *C. & S.* no. 1025.
Barhona carneola, *Moore, Lep. Atk.* p. 56; *C. & S.* no. 1083.

♂. Head and thorax white; the line behind the head crimson;

thorax with black spots; abdomen white, with a slight crimson tinge. Fore wing ochreous white; a crimson speck at base of costa; four lunulate equidistant lines; a small black spot in the cell and lunule on discocellulars. Hind wing whitish; the basal and inner areas tinged with crimson; a faint submarginal fuscous band.

♀. Pale pink; antennæ, palpi, and legs black; the 1st joint of antennæ and line behind the head crimson. Fore wing with a black lunule from costa to costal nervure at middle of cell; a lunule on discocellulars and line from vein 1 to centre of inner margin.

Hab. Sikhim. *Exp.*, ♂ 62, ♀ 92–98 millim.

1043. **Lymantria bivittata**, *Moore, Lep. Atk.* p. 57; *C. & S.* no. 1022.

♀. Head and thorax white; palpi and antennæ black; frons tinged with crimson; basal joints of antennæ and line behind the head crimson; abdomen crimson, the basal and terminal segments white. Fore wing silvery white; two black basal marks; an outwardly oblique antemedial line with waved edges, joined at inner margin by an inwardly oblique postmedial line; a series of marginal spots. Hind wing white.

Hab. Sikhim; Sylhet. *Exp.* 100 millim.

1044. **Lymantria semicincta**, *Wlk. Cat.* iii, p. 620; *Butl. Ill. Het.* v, pl. 90, fig. 7; *C. & S.* no. 1047.

Palpi, antennæ, and legs black; head yellowish white, with a black spot behind it; the basal joints of antennæ orange; thorax yellowish white, with a large black patch on vertex and spot on tegulæ; abdomen crimson. Fore wing black; a yellowish-white spot at base of inner margin and one in end of cell; three conjoined postmedial spots from costa and three from inner margin. Hind wing crimson, with a broad marginal black border decreasing to anal angle; cilia of both wings chequered yellow and black.

Hab. Simla; Sikhim. *Exp.* 60 millim.

Genus **IMAUS**.

Imaus, *Moore, Lep. Atk.* p. 54 (1879).
Dura, *Moore, Lep. Atk.* p. 56 (1879).

Type, *I. mundus*, Wlk.

Range. N.E. India; Java; Celebes.

Palpi rather long, slender, and porrect. Antennæ with the branches long in both sexes. Fore wing with veins 3, 4, 5 from near angle of cell; 6 from below upper angle; 7, 8, 9, 10 stalked, 7 being given off further from the cell or from the same point as 10. Hind wing with veins 3, 4, 5 from near angle of cell; 6 and 7 from upper angle; the outer margin produced at vein 3.

Sect. I. (*Imaus*). Fore wing with vein 11 not anastomosing with 12. Hind wing with outer margin slightly produced.

1045. **Imaus mundus**, *Wlk. Cat.* iv, p. 875; *C. & S.* no. 1012.

Pale brown; legs spotted with black. Fore wing with prominent subbasal and antemedial series of spots; a prominent spot in the cell and line on each side of discocellulars; a prominent very highly dentate postmedial line; well-marked series of submarginal lunules and marginal spots. Hind wing with indistinct submarginal band and marginal series of specks.

Hab. Throughout N.E. India; Java. *Exp.* 80 millim.

Sect. II. (*Dura*). Fore wing with vein 11 anastomosing with 12. Hind wing produced and angled at vein 3.

1046. **Imaus albus**, *Moore, Lep. Atk.* p. 56; *C. & S.* no. 1084.

White, with a slight brownish tinge; palpi black at sides; branches of antennæ red-brown. Fore wing with about seven

Fig. 316.—*Imaus albus*, ♂. $\frac{1}{1}$.

indistinct brownish waved lines; orbicular and reniform stigmas with brownish outline; a marginal series of black spots to both wings.

Hab. Sikhim. *Exp.*, ♂ 38, ♀ 58 millim.

Genus HIMALA.

Himala, *Moore, Lep. Atk.* p. 57 (1879).

Type, *H. argentea*, Wlk.

Range. Himalayas; Assam.

Palpi slender, porrect, and reaching beyond the frons; antennæ with tufts of long hair from the basal joint, the branches long. Hind tibiæ with two pairs of spurs. Fore wing with veins 3, 4, 5 from near angle of cell; 6 from upper angle; 7, 8, 9 stalked. Hind wing with veins 3, 4, 5 from near lower angle of cell; 6 and 7 stalked.

1047. **Himala argentea**, *Wlk. Cat.* iv, p. 827; *C. & S.* no. 1056.
Dasychira ilita, *Moore, Lep. E. I. Co.* p. 341.

Head, thorax, and abdomen white. Fore wing silvery white,

Fig. 317.—*Himala argentea*, ♂. 1/1.

the veins black; outer margin fuscous. Hind wing white; the veins black towards outer margin; a marginal black line.

Hab. N.W. Himalayas; Dehra Dún; Sikhim; Assam. *Exp.*, ♂ 44, ♀ 54 millim.

Genus **GAZALINA**.

Gazalina, *Wlk. Cat.* xxxii, p. 398 (1865).
Oligoclona, *Feld. Reis. Nov.* pl. 94, fig. 10, *Erk.* p. 7 (1874).

Type, *G. apsara*, Moore.
Range. Himalayas.

Palpi very minute. Antennæ with the branches of moderate length in male, serrate in female; tufts of long hair from the basal joint. Mid and hind tibiæ with minute terminal pairs of spurs. Abdomen of female with a very large anal tuft. Fore wing with veins 3 and 4 coincident or rarely forking just before the margin; 5 from lower angle of cell; 6 from just above middle of discocellulars; 7 from upper angle; 8, 9, 10 stalked. Hind wing with veins 3 and 4 from near angle of cell; 5 from near upper angle; 6 and 7 stalked.

1048. **Gazalina apsara**, *Moore, Lep. E. I. Co.* p. 341; *C. & S.* no. 993.
Gazalina venosata, *Wlk. Cat.* xxxii, p. 398; *Butl. Ill. Het.* v, pl. 89, fig. 5; *C. & S.* no. 996.
Oligoclona nervosa, *Feld. Reis. Nov.* pl. 95, fig. 8.

Fig. 318.—*Gazalina apsara*, ♂. 1/1.

♂. Head and thorax white; frons, legs, and shafts of antennæ black, the branches of the last brown; collar sometimes tinged with fulvous; abdomen black, the segments fringed with white and with a lateral white fringe. Fore wing white, the veins black towards outer margin. Hind wing white.

♀. The segments of abdomen less fringed with white, and with a very large fulvous anal tuft.

The form *venosata*, from Sikhim, has the costa and the whole of the veins of fore wing black, and the veins of hind wing black towards outer margin; the segmental white fringes of abdomen narrower in both sexes.

Hab. N.W. Himalayas; Sikhim. *Exp.*, ♂ 44, ♀ 50 millim.

1049. **Gazalina chrysolopha**, *Koll. Hügel's Kaschmir*, iv, p. 470; *C. & S.* no. 994.

Dasychira antica, *Wlk. Cat.* iv, p. 867; *Butl. Ill. Het.* v, pl. 89, fig. 4.

Oligoclona chordigera, *Feld. Reis. Nov.* pl. 94, fig. 10.

Differs from *apsara* in the fore wing having an indistinct subbasal black line; a streak along median nervure; two slightly waved medial oblique lines, beyond which the veins are black; the thorax and collar sometimes tinged with fulvous.

Larva brown, with tufts of long pale brown hair; a dorsal series of short fulvous tufts. Head and legs fulvous; 5 pairs of prolegs.

Hab. N.W. Himalayas; Sikhim. *Exp.*, ♂ 46, ♀ 54 millim.

1050. **Gazalina transversa**, *Moore, Lep. Atk.* p. 47, pl. ii, fig. 22; *C. & S.* no. 995.

♂. Head, thorax, and abdomen pure white; the anal tuft white. Wings pure white; fore wing with the antemedial line represented by a line from vein 1 to inner margin; the postmedial line nearly straight and not reaching the costa; no black marks at base or streaks on the veins.

Hab. Sikhim. *Exp.* 30 millim.

Genus TOPOMESA.

Topomesa, *Wlk. Cat.* xxxv, p. 1921 (1866).

Type, *T. subinanis*, Wlk.

Range. Burma; Borneo; Java.

♀. Palpi obliquely upturned; antennæ with the branches long; mid tibiæ with one pair of spurs, hind tibiæ with two pairs. Fore wing with the apex somewhat acute, the outer margin excised below the apex; vein 3 from before angle of cell; 4 and 5 from close to angle; 6 from below upper angle; 7, 8, 9, 10 stalked. Hind wing with veins 3, 4, 5 from near lower angle of cell; 6 and 7 from upper angle.

1051. **Topomesa subinanis**, *Wlk. Cat.* xxxv, p. 1921.

♀. Head, thorax, and abdomen sulphur-yellow; frons and palpi red-brown; antennæ with the branches brown. Wings sulphur-yellow; fore wing with a red-brown spot beyond the lower angle

of cell, and some marks on outer margin; hind wing with a red-brown mark on outer margin towards anal angle.

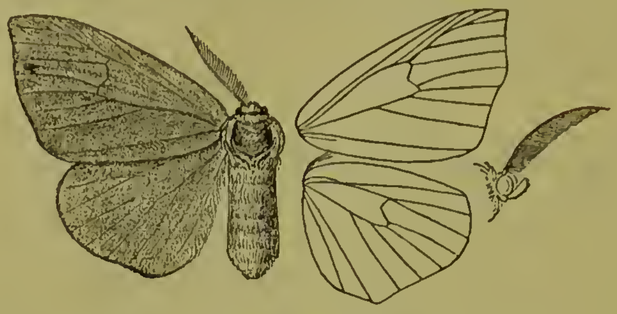

Fig. 319.—*Topomesa subinanis*, ♀. $\frac{1}{1}$.

Hab. Tenasserim; Borneo; Java. *Exp.* 42–56 millim.

Genus **DACTYLORHYNCHA**, nov.

Type, *D. pallida*, Hmpsn.
Range. Nilgiris.

Palpi porrect and very long, the 3rd joint short; antennæ long and with the branches long; legs with the spurs long. Fore wing with veins 3, 4, 5 from near lower angle of cell; 6 from below upper angle; 7 from angle; 8, 9, 10 stalked. Hind wing with veins 3 and 4 from angle of cell; 5 from above angle; 6 and 7 stalked.

1052. **Dactylorhyncha pallida**, *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, fig. 10.

♂. Uniform pale silky grey-brown; fore wing with some dark marginal marks below the apex; branches of antennæ dark.

Fig. 320.—*Dactylorhyncha pallida*, ♂. $\frac{1}{1}$.

Hab. Nilgiris. *Exp.* 28 millim.

Genus **EUPROCTIS.**

Euproctis, *Hübn. Verz.* p. 159 (1818).
Artaxa, *Wlk. Cat.* iii, p. 794 (1855).
Adlullia, *Wlk. Cat.* xxxii, p. 392 (1865).
Chærotricha, *Feld. Reis. Nov.* pl. 98, *Erk.* p. 3 (1874).
Themaca, *Wlk. Cat.* xxxii, p. 394 (1865).
Bembina, *Wlk. Cat.* xxxii, p. 505 (1865).

Somena, *Wlk. Cat.* vii, p. 1734 (1855).
Orvasca, *Wlk. Cat.* xxxii, p. 502 (1865).
Lopera, *Wlk. Cat.* iv, p. 919 (1855).
Gogana, *Wlk. Cat.* xxxv, p. 1920 (1866).
Antipha, *Wlk. Cat.* iv, p. 806 (1855).
Utidava, *Wlk. Cat.* xxvi, p. 1689 (1862).
Arna, *Wlk. Cat.* v, p. 1176 (1855).

Type, *E. chrysorrhœa*, Linn., from Europe.
Range. Palæarctic, African, Oriental and Australian regions.
Palpi obliquely porrect, reaching beyond the frons; antennæ bipectinated in both sexes, the branches long in male, each with a spine to keep it in position with regard to the contiguous branch. Mid tibiæ with one pair of long spurs, hind tibiæ with two pairs; female with a large anal tuft. Fore wing with veins 3, 4, 5 from near angle of cell; 6 from or from below upper angle; 7, 8, 9, 10 stalked, 10 being given off towards apex. Hind wing with veins 3 and 4 stalked or from angle of cell; 5 from above angle; 6 and 7 stalked.

A. *Fore wing white, pale ochreous, yellow, grey, or black, without, or with hardly a trace of, lines or bands.*

1053. **Euproctis negrita**, n. sp.

♂. Head, thorax, and abdomen black, the anal tuft orange; legs whitish. Wings black, with the bases white, in some specimens slightly, in others to the middle, except the costa of fore wing; cilia sometimes white-tipped.
♀. White, suffused with black, especially on outer area.
Hab. Sikhim (*Möller*). *Exp.*, ♂ 33, ♀ 40 millim. Type in coll. Elwes.

1054. **Euproctis renominata.**
Charnidas uniformis, *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, fig. 4 (præocc.).

♂. Head, thorax, and fore wing smoky grey-brown; the last with the costa and cilia paler. Abdomen and hind wing pale.
Hab. Nilgiris. *Exp.* 36 millim.

1055. **Euproctis divisa**, *Wlk. Cat.* iv, p. 836; *C. & S.* no. 938.
Euproctis melanophila, *Wlk. Cat.* xxxii, p. 349; *C. & S.* no. 945 (part.).
Euproctis metamelana, *Wlk. Cat.* xxxii, p. 349; *C. & S.* no. 949.

Head and thorax pure white; the branches of antennæ and in some specimens the collar tinged with fulvous; abdomen deep black, with orange anal tuft. Wings pure shining white, some specimens with scattered black scales on inner area of fore wing.
Hab. Sikhim; Nágas. *Exp.*, ♂ 34, ♀ 42–50 millim.

1056. **Euproctis latifascia**, *Wlk. Cat.* iv, p. 831; *C. & S.* no. 945 (part.).
Euproctis antica, *Wlk. Cat.* iv, p. 835; *C. & S.* no. 933.
Euproctis postica, *Wlk. Cat.* xxxii, p. 348; *C. & S.* no. 950.
Euproctis abdominalis, *Moore, P. Z. S.* 1888, p. 398; *Butl. Ill. Het.* vii, pl. 123, figs. 4, 5.

Differs from *divisa* in the head, thorax, and wings being dull white or tinged with ochreous, the abdomen fuscous black; anal tuft brownish orange.

Some specimens have the base of costa of fore wing black and a black mark at outer angle.

Hab. Kashmir; Dharmsála; Nepal; Manipur. *Exp.*, ♂ 32, ♀ 48 millim.

1057. **Euproctis subfasciata**, *Wlk. Cat.* xxxii, p. 332; *C. & S.* no. 918.
Artaxa trifasciata, *Moore, Lep. Atk.* p. 51; *C. & S.* no. 919.

Differs from *latifascia* in the abdominal tuft being whitish, very slightly tinged with orange in male; some specimens with very slight traces of a medial band of dark scales on fore wing from lower angle of cell to inner margin.

In the form *trifasciata* the head, thorax, and fore wing are suffused with pale brownish ochreous, the pale lines being better defined.

Hab. Sikhim; Cachar; Assam; Calcutta; Nilgiris. *Exp.*, ♂ 36, ♀ 48 millim.

1058. **Euproctis bimaculata**, *Wlk. Cat.* iv, p. 836; *Moore, Lep. Ceyl.* ii, pl. 112, figs. 6, 6 *a*, *b* (larva); *C. & S.* no. 936.
Euproctis bigutta, *Wlk. Cat.* iv, p. 837; *C. & S.* no. 935.
Euproctis lutescens, *Wlk. Cat.* iv, p. 837; *C. & S.* no. 947.
Euproctis immaculata, *Moore, Trans. Ent. Soc.* 1884, p. 358; *C. & S.* no. 942.
Euproctis celsa, *Wlk. Cat.* xxxv, p. 1915.

♂ Pure white, or in the form *lutescens* the head, thorax, and fore wing slightly tinged with ochreous; a black spot at end of cell of fore wing, which is very large in the form *bimaculata*, smaller in *bigutta*, and entirely absent in the form *immaculata*.

♀ with the anal tuft golden orange.

Larva purplish brown, with dorsal and lateral series of white-speckled tubercles bearing tufts of short brown hair.

Hab. Philippines; Sikhim; Canara; Ceylon; Burma; Mergui; Andamans; Java. *Exp.*, ♂ 38–48, ♀ 28–66 millim.

1059. **Euproctis lunata**, *Wlk. Cat.* iv, p. 837; *Butl. Ill. Het.* v, pl. 89, fig. 9; *Forsayeth, Trans. Ent. Soc.* 1884, pl. 14, figs. 5 *a–c* (larva); *C. & S.* no. 946.

♂. Pale bright ochreous; fore wing with a large black lunule on discocellulars.

♀. Fore wing whitish ochreous; the anal tuft brownish ochreous.

Larva brown, with anterior, posterior, and lateral tufts of long hair; thoracic somites with dorsal quadrate white marks; the third somite with paired dorsal tubercles; fifth to anal somites with paired dorsal quadrate white marks. Spins a hairy cocoon on twigs.

Hab. N.W. Himalayas; Bengal; throughout S. India and Ceylon. *Exp.*, ♂ 34, ♀ 38 millim.

1060. **Euproctis semisignata**, *Wlk. Cat.* xxxii, p. 356; *C. & S.* no. 927.
Artaxa leithiana, *Moore, P. Z. S.* 1879, p. 399, pl. 32, fig. 9; *C. & S.* no. 968.
Artaxa citrina, *Moore, A. M. N. H.* (4) xx, p. 344; *C. & S.* no. 907.
Artaxa brevivitta, *Moore, P. Z. S.* 1879, p. 400, pl. 32, fig. 10; *C. & S.* no. 905.
Artaxa erecta, *Moore, P. Z. S.* 1879, p. 400, pl. 32, fig. 6; *C. & S.* no. 910.
Euproctis illanta, *Swinh. Trans. Ent. Soc.* 1891, p. 138.
Artaxa howra, *Moore, Lep. Atk.* p. 51; *C. & S.* no. 912.

♂. Yellowish white or pale bright ochreous; fore wing with a smoky black spot at end of cell and a series of four spots from the lower angle to inner margin, any or all of which may be absent, or be conjoined into a band.

♀ with the band slight and often ferruginous.

Hab. Throughout the plains of India and Ceylon. *Exp.*, ♂ 33–40, ♀ 40–52 millim.

*1061. **Euproctis venosa**, *Moore, Lep. Atk.* p. 50, pl. ii, fig. 5; *C. & S.* no. 922.

White; the antennæ, frons, palpi, fore legs, and anal tuft pale ochreous. Fore wing with subbasal, medial, and marginal yellow bands crossed by the white veins; an interrupted ill-defined band of brown scales from the upper angle of cell to inner margin and a narrower submarginal band.

Hab. Sikhim. *Exp.* 38 millim.

1062. **Euproctis rhoda**, *Swinh. Trans. Ent. Soc.* 1891, p. 138.
Artaxa obsoleta, *Hmpsn. Ill. Het.* viii, p. 57, pl. 140, fig. 12.

♂. Head, thorax, and fore wing bright orange-yellow; the last with some dark scales on inner basal area; traces of an oblique antemedial line and more prominent postmedial band of scales excurved beyond end of cell, sometimes reduced to two conjoined spots below the angle of cell.

The more heavily-marked and brighter form *rhoda* has a black spot at end of cell of fore wing, which is absent in the paler *obsoleta*, though present in another pale form.

Hab. N. Kanara; Nilgiris; Ceylon. *Exp.* 26–32 millim.

1063. **Euproctis inconcisa**, *Wlk. Cat.* xxxii, p. 332; *C. & S.* no. 913.
Artaxa dispersa, *Moore, Lep. Atk.* p. 50, pl. ii, fig. 6; *C. & S.* no. 909.

Head and thorax pale yellow; abdomen black, the anal tuft orange. Fore wing pale lemon-yellow, irrorated with black scales forming very indistinct antemedial, medial, and postmedial bands. Hind wing white, the cilia ochreous.

Hab. Sikhim. *Exp.*, ♂ 36, ♀ 48 millim.

1064. **Euproctis sulphurescens**, *Moore, P. Z. S.* 1888, p. 399; *Butl. Ill. Het.* vii, p. 35, pl. 123, figs. 6, 7.

♂. Ochreous white or bright ochreous; abdomen black, the anal tuft orange; fore wing with very slight traces of a medial band towards inner margin; hind wing paler.

♀ with the abdomen ochreous.

Hab. Kángra. *Exp.*, ♂ 38–45, ♀ 48 millim.

1065. **Euproctis fulvipuncta**, *Hmpsn. Ill. Het.* ix, ined., pl. 159, figs. 2, 8, pl. 175, fig. 14 (larva).

♂. Pure white, the branches of antennæ pale brown; fore wing with an orange spot at end of cell and one or two subapical orange spots.

♀ with orange anal tuft.

Larva deep blue-black; a narrow grey spiracular stripe; the 1st somite with paired small lateral tubercles, each with a tuft of black hairs; 2nd to 11th somites with lateral tufts of white hairs; the 2nd, 3rd, and 10th somites with paired dorsal white bristles; 4th to 9th somites each with four short brownish dorsal tufts; 8th to 11th with four orange tufts; the 11th with four mouse-brown tufts; 8th and 9th with a small yellow dorsal tubercle.

Hab. Ceylon. *Exp.*, ♂ 26, ♀ 32 millim.

B. *Fore wing white, with well-defined lines.*

1066. **Euproctis postincisa**, *Moore, P. Z. S.* 1879, p. 400, pl. 32, fig. 5; *C. & S.* no. 951.

♂. Pure white; fore legs and tarsi of mid legs blackish. Fore wing with a nearly straight black medial line not reaching the costa and a black streak beyond it above vein 1.

Hab. Sikhim. *Exp.* 34 millim.

*1067. **Euproctis semivitta**, *Moore, Lep. Atk.* p. 48, pl. ii, fig. 25; *C. & S.* no. 953.

♂. White; thorax pale ochreous; abdomen ochreous white, slightly banded with black; anal tuft bright ochreous; antennæ pale brown; second joint of palpi black; fore legs ochreous in front. Fore wing with a medial band of black scales from the subcostal nervure to inner margin; a few black scales on inner margin on each side of the band.

Hab. Khásis. *Exp.* 30 millim.

1068. **Euproctis bifascia**, *Hmpsn. Ill. Het.* viii, p. 58, pl. 141, fig. 8.

♀. Pure white; fore wing with antemedial and submarginal slightly waved lines composed of short orange streaks.

Hab. Nilgiri plateau. *Exp.* 42 millim.

C. *Fore wing orange-yellow (rarely brownish), with ante- and post-medial pale lines which may be almost obsolete.*

a. *Fore wing with no submarginal black spots.*

1069. **Euproctis flavinata**, *Wlk. Cat.* xxxii, p. 331.

♂. Head, thorax, and fore wing bright orange-yellow; the last with an orange spot at end of cell, and indistinct ante- and post-medial pale curved lines, furthest apart towards costa, the area between them powdered with dark scales—these markings being always very indistinct and often almost obsolete. Abdomen and hind wing paler.

♀ with the anal tuft brown.

Hab. China; throughout India, Ceylon, and Burma; Borneo. *Exp.*, ♂ 28, ♀ 38–44 millim.

1070. **Euproctis varians**, *Wlk. Cat.* iii, p. 796; *C. & S.* no. 921.
Artaxa pusilla, *Moore, Lep. Ceyl.* ii, p. 86, pl. 112, fig. 4; *C. & S.* no. 917.
Euproctis pygmæa, *Moore, Lep. Atk.* p. 48 (nec *Wlk.*).

♂. Differs from *flavinata* in its small size; the two pale lines of the fore wing more prominent, but with no dark powdering between them; the orange cell-spot generally absent.

♀. Paler and without markings.

Hab. China; Formosa; throughout India, Ceylon, and Burma. *Exp.*, ♂ 18–22, ♀ 18–29 millim.

1071. **Euproctis subfuscula**, *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, figs. 5, 11.

Differs from *flavinata* in being more or less suffused with brown, or generally uniform reddish brown; fore wing with the cell-spot and lines indistinct; hind wing not paler. Underside of fore wing with the costa tinged with fuscous in male.

Hab. Nilgiris. *Exp.*, ♂ 38, ♀ 46 millim.

1072. **Euproctis cervina**, *Moore, A. M. N. H.* (4) xx, p. 345; *id. Lep. Ceyl.* ii, pl. 112, fig. 3; *Hmpsn. Ill. Het.* ix, pl. 158, fig. 16 (♀); *C. & S.* no. 906.

♂. Head, thorax, and fore wing brownish fulvous, the last

with medial and postmedial pale lines, the former excurved at discocellulars, the latter evenly curved. Abdomen and hind wing fuscous; cilia of both wings yellow.

♀. Head orange-yellow; thorax, abdomen, and wings pale ochreous white, with a slight fuscous tinge, the margin of wings yellow; fore wing without pale lines.

The Kashmir form in the male has the fore wing darker, with the pale lines less prominent; the hind wing dark fuscous as compared with the typical Ceylon form.

Hab. Kashmir; Ceylon. *Exp.*, ♂ 26, ♀ 30 millim.

1073. **Euproctis anguligera**, *Butl. P. Z. S.* 1886, p. 385.

♂. Head and thorax bright yellow; abdomen slightly tinged with fuscous, the anal tuft orange. Fore wing bright canary-yellow; a broad medial dark-speckled band with pale edges, its outer edge angled at vein 3; dark spots beyond it near outer angle and above vein 3. Hind wing paler.

Hab. Murree; Burma; Andamans. *Exp.* 28–32 millim.

1074. **Euproctis arenacea**, n. sp.

♂. Head, thorax, and abdomen brownish ochreous. Fore wing pale yellow, irrorated with dark scales; the ante- and postmedial pale lines indistinct, the former with a broad diffused dark band preceding it; the latter with a large dark patch beyond it on the costa and slightly outlined with dark scales. Hind wing pale yellow.

Hab. Sikhim (*Möller*). *Exp.* 22 millim. Type in coll. Elwes.

b. *Fore wing with submarginal black spots.*

1075. **Euproctis vitellina**, *Koll. Hügel's Kaschmir*, iv, p. 471; *Butl. Ill. Het.* vii, pl. 138, fig. 13 (larva); *C. & S.* no. 957.
Euproctis gamma, *Wlk. Cat.* vii, p. 1731; *C. & S.* no. 940.
Artaxa princeps, *Wlk. Cat.* xxxii, p. 331; *C. & S.* no. 916.
Themaca comparata, *Wlk. Cat.* xxxii, p. 395; *C. & S.* no. 901.

♂. Bright orange-yellow; fore wing with a medial pale-edged band of dark scales, which bifurcates at the lower angle of cell and does not reach the costa; one or two submarginal black spots towards apex, which are almost obsolete in some specimens. Hind wing paler.

♀ with the anal tuft ochreous.

Larva dull black; an imperfect dorsal series of white dots, and a few scattered lateral dots; each somite with eight small rust-red tubercles bearing white hairs.

Hab. N.W. Himalayas. *Exp.*, ♂ 38, ♀ 54 millim.

1076. **Euproctis digramma**, *Guér., Cuv. Icon. R. Anim., Ins.* p. 508, pl. 86, fig. 4; *C. & S.* no. 908 (part.).
Artaxa unimacula, *Moore, P. Z. S.* 1879, p. 399; *C. & S.* no. 920.

Fig. 321.—*Euproctis digramma*, ♂. ½.

Head, thorax, and fore wings bright orange-yellow; abdomen more or less tinged with fuscous, the anal tuft orange; fore wing with ante- and postmedial curved pale lines, the space between them being slightly powdered with dark scales towards inner margin; two prominent subapical black spots. Hind wing paler.

The form *unimacula* has only one subapical spot to fore wing.

Hab. Throughout India, Ceylon, and Burma; Java. *Exp.*, ♂ 25–34, ♀ 40 millim.

1077. **Euproctis guttata**, *Wlk. Cat.* iv, p. 795.
Artaxa digramma, *Moore, Lep. Ceyl.* ii, pl. 112, figs. 1, 1 *a*; *C. & S.* no. 908 (part.), *nec* Bombyx digramma, *Guér.*
Artaxa pelona, *Swinh. Trans. Ent. Soc.* 1891, p. 138.

Differs from *digramma* in having no fuscous on abdomen; the fore wing with an orange spot at end of cell, and an additional black spot towards outer angle.

Some specimens have the two pale lines of the fore wing more or less outlined with red-brown or fuscous, and the space between them filled in with fuscous. The submarginal black spots are occasionally almost or completely obsolete.

Larva black, the head chestnut; long anterior and short lateral tufts of grey hair; the thoracic somites with dorsal grey tufts; the others with dorsal tufts of short brown hair.

Hab. Throughout India, Ceylon, and Burma *Exp.*, ♂ 30, ♀ 40 millim.

1078. **Euproctis fraterna**, *Moore, Lep. Ceyl.* ii, p. 85; *Kmpsn. Ill. Het.* ix, pl. 176, fig. 2 (larva); *C. & S.* no. 911.

♂. Differs from *guttata* in its smaller size, and the fore wing being shorter and squarer.

♀ sometimes with an almost complete submarginal series of black spots to fore wing.

Larva. Head crimson; body black; the 1st somite with long lateral tufts of black hair rising from prominent tubercles; the other somites with dorsal and lateral tufts of white hair; subdorsal pale lines; 9th and 10th somites with white dorsal spots; 11th somite with a dorsal black tuft.

Hab. Throughout India, Ceylon, and Burma. *Exp.*, ♂ 24, ♀ 30–38 millim.

1079. **Euproctis apicalis**, *Wlk. Cat.* xxxii, p. 505; *Moore, Lep. Ceyl.* ii, pl. 111, fig. 5, ♀; *Hmpsn. Ill. Het.* ix, pl. 159, fig. 1, ♂, pl. 175, fig. 11 (larva); *C. & S.* no. 1087.

♂. Head, thorax, abdomen, and wings fulvous yellow. Fore wing with ante- and postmedial indistinct pale waved lines, with diffused red-brown scales on their edges; one subapical white-ringed black spot, and another towards outer angle.

♀. Head, thorax, and anal tuft dirty grey; abdomen orange; fore wing bright orange-red, the lines indistinct and without dark edges; two black specks towards apex and two near anal angle; hind wing orange.

Larva black; the head scarlet; long anterior and posterior tufts of black hair; each somite with lateral tufts of white hair curved upwards over the back; white bands on 1st and 2nd somites, and dorsal spots on 9th and 10th.

Hab. Newera Ellia, Ceylon. *Exp.*, ♂ 40, ♀ 33 millim.

1080. **Euproctis antiphates**, n. sp.

♂. Head, thorax, and abdomen brown, the anal tuft yellow. Fore wing brownish grey, more or less suffused with brown; the ante- and postmedial pale lines outlined with brown; a dark spot at end of cell sometimes nearly obsolete; the outer area from the postmedial line deeply suffused with brown; a submarginal series of dark lunules outlined with grey. Hind wing brownish white, the veins darker, a dark spot at end of cell and diffused postmedial band.

Hab. Nága Hills, 2000 feet (*Doherty*). *Exp.* 24 millim. Type in coll. Elwes.

1081. **Euproctis costalis**, *Wlk. Cat.* iv, p. 806; *Moore, Lep. Ceyl.* ii, pl. 110, figs. 2, 2 *a*, *b* (larva); *C. & S.* no. 1041.
Lacida complens, *Wlk. Cat.* xxxii, p. 336.
Rilia illepida, *Wlk. Cat.* xxxii, p. 436.
Utidava incomptaria, *Wlk. Cat.* xxvi, p. 1689; *C. & S.* no. 3690.

♂. Head, thorax, and abdomen fuscous. Fore wing whitish, with the basal and costal areas suffused with dark brown; a large diffused brown patch with three dark spots on it at end of cell, joined by an oblique diffused streak from the apex; an indistinct submarginal series of dark spots. Hind wing pale fuscous.

♀. The base and costa of fore wing not suffused with brown, the three spots at end of cell not on a brown patch, and separated from the oblique streak.

Larva blackish brown, tufted with short hair; a pink line between 5th and 6th somites.

Hab. Ceylon. *Exp.*, ♂ 24, ♀ 30 millim.

1082. **Euproctis antica**, *Wlk. Cat.* iv, p. 802; *Moore, Lep. Ceyl.* ii, pl. 110, fig. 3; *C. & S.* no. 1039.
Anaxila notata, *Wlk. Cat.* iv, p. 919.

♂. Differs from *costalis* in its larger size; the fore wing wholly suffused with brown; the oblique stripe less prominent, the submarginal series of spots more so.

♀ like *costalis*, but larger.

Hab. Ceylon. *Exp.*, ♂ 34, ♀ 38 millim.

D. *Fore wing with diffused red-brown or vinous-brown bands, which may occupy the whole wing except a discal patch.*

a. *Fore wing with no submarginal black spots.*

1083. **Euproctis plana**, *Wlk. Cat.* vii, p. 1731; *Butl. Ill. Het.* v, pl. 89, fig. 13; *id. Ill. Het.* vii, pl. 138, fig. 5 (larva); *C. & S.* no. 971.
Euproctis discinota, *Moore, P. Z. S.* 1877, p. 601; *C. & S.* no. 937.
Chærotricha immaculata, *Butl. Ill. Het.* v, pl. 89, fig. 14; *C. & S.* no. 967.
Euproctis muelleri, *Snell. Tijd. v. Ent.* xx, 1877, p. 13.

♂. Head, thorax, and abdomen fulvous. Fore wing bright orange-yellow, usually slightly powdered with black scales; a ferruginous band from near base of costa to middle of median nervure, then straight to inner margin; a postmedial band excurved beyond end of cell; a black spot at end of cell; long black hairs on inner margin. Hind wing paler.

♀ with the bands nearly obsolete, the black spot being also absent in the specimen named *immaculata.*

Larva dark brown, marbled with red-brown; a series of deep red lateral tubercles bearing short white processes and tufts of white hair; small dorsal tubercles on thoracic somites bearing tufts of white hair; fourth to anal somite with dorsal tubercles bearing short silky-brown tufts.

Hab. Kángra; Sikhim; Burma; Andamans. *Exp.*, ♂ 44–54, ♀ 60–72 millim.

1084. **Euproctis icilia**, *Stoll, Cram. Pap. Exot.* v, p. 158, pl. 35, fig. 5; *C. & S.* no. 941.
Chærotricha decussata, *Moore, A. M. N. H.* (4) xx, p. 345; *id. Lep. Ceyl.* ii, pl. 113, figs. 2, 2 *b* (larva); *C. & S.* no. 966.

Differs from *plana* in the whole base of the fore wing being purplish brown, and often conjoined to the broad postmedial band below the cell.

Larva purplish brown, tufted with short grey hair, and marked with numerous irregular reddish lines; pale speckled dorsal tubercles on 4th, 5th, and 11th somites connected by a chain-like band; thoracic somites with a black dorsal line.

Hab. N.W. Himalayas and throughout S. India and Ceylon. *Exp.*, ♂ 38–48, ♀ 54 millim.

1085. **Euproctis plagiata**, *Wlk. Cat.* iv, p. 858; *C. & S.* no. 970.

♀. Differs from *icilia* in the basal purple-brown area of the fore wing being joined to the postmedial band at the costal as well as inner area, leaving a patch at lower angle of cell and the outer margin yellow; no black spot at end of cell.

Hab. Nepal. *Exp.* 60 millim.

1086. **Euproctis madana**, *Moore, Lep. E. I. Co.* p. 348; *C. & S.* no. 948.

♀. Head, thorax, and abdomen yellow. Fore wing yellow, with the basal area brown, running out to a point on the median nervure; a black spot at end of cell; a postmedial band excurved beyond cell, widest at costa, and sending a spur to outer margin between veins 5 and 6. Hind wing pale.

Hab. Sikhim. *Exp.* 64 millim.

1087. **Euproctis varia**, *Wlk. Cat.* iv, p. 840; *Moore, Lep. E. I. Co.* pl. 9 *a*, fig. 5; *C. & S.* no. 974.

Differs from *plana* in the abdomen being black above, the anal tuft orange. Fore wing with a red-brown spot near base; a black spot at end of cell; an irregular oblique postmedial red-brown band irrorated with dark scales, becoming very much wider from lower angle of cell to inner margin.

A variety from Sikhim has the whole outer area of the fore wing red-brown, and the hind wing tinged with rufous.

Hab. Simla; Sikhim; Nágas; Mergui. *Exp.*, ♂ 46, ♀ 58 millim.

1088. **Euproctis flavimaculata**, n. sp.

♀. Head and thorax reddish brown; abdomen fuscous, the anal segment orange. Fore wing uniform vinous brown, irrorated with dark scales; a yellow patch at end of cell with a black spot on it. Hind wing greyish white, the central marginal area irrorated with brown scales.

Hab. Sikhim. *Exp.* 64 millim. Type in coll. Knyvett.

b. *Fore wing with black submarginal spots.*

1089. **Euproctis marginata**, *Moore, Lep. Atk.* p. 49; *C. & S.* no. 969.
Chærotricha quadrangularis, *Moore, Lep. Atk.* p. 50, pl. ii, fig. 23; *C. & S.* no. 972.

Differs from *plagiata* in having the abdomen black above, except the anal segment and tuft which are orange. Fore wing with the red-brown suffusion darker and better defined from the yellow marginal area, which bears a series of eight black spots.

The form *quadrangularis* has one subapical and two medial spots of the series absent; the hind wing paler.

Hab. Sikhim. *Exp.*, ♂ 46, ♀ 60 millim.

E. *Fore wing suffused with vinous or olive-brown and with two pale lines.*

a. *Fore wing without submarginal black spots.*

1090. **Euproctis albopunctata,** n. sp.

♀. Head, thorax, and abdomen rufous brown, the anal tuft yellow. Fore wing vinous brown, irrorated with dark scales; an antemedial, curved, pale line and postmedial line much excurved beyond end of cell; a broken series of marginal white spots; cilia white and brown. Hind wing pale fuscous, with an irregular pale margin and brown marginal line; cilia whitish.

Hab. Sikhim. *Exp.* 52 millim. Type in coll. Elwes.

1091. **Euproctis albodentata,** *Moore, P. Z. S.* 1879, p. 401; *C. & S.* no. 959.

Differs from *albopunctata* in the head, thorax, and abdomen being brownish white. Fore wing suffused with olive-brown, the veins and margins pale; the pale lines more angled and approaching each other towards inner margin; a complete marginal series of triangular white marks. Hind wing pale ochreous fuscous, the marginal area whitish.

Hab. N.W. Himalayas; Burma. *Exp.* 45 millim.

1092. **Euproctis lativitta,** *Moore, Lep. Atk.* p. 49, pl. ii, fig. 18; *C. & S.* no. 961.

♀. Head and thorax whitish, the branches of antennæ brown; abdomen blackish, the anal tuft ochreous. Fore wing with the outer margin slightly angled at vein 5; whitish, slightly irrorated with ochreous and dark scales, especially between the white bands which approach each other towards inner margin, and near centre of outer margin; a black lunule at end of cell. Hind wing white, slightly irrorated with dark scales, especially on the disk.

Hab. Sikhim; Nága Hills. *Exp.* 52 millim.

1093. **Euproctis variegata,** *Hmpsn. Ill. Het.* viii, p. 56, pl. 140, fig. 6.

♀. Head, thorax, and abdomen pale ochreous. Fore wing ochreous white, irrorated with dark brown scales; the pale ante- and postmedial lines indistinct; a conspicuous orange spot at end of cell edged with dark scales; some whitish marks beyond the postmedial line. Hind wing pale ochreous.

Hab. Nilgiris. *Exp.* 38 millim.

1094. **Euproctis nigripennis,** n. sp.

♂. Head and thorax fulvous; abdomen black, with orange anal tuft. Fore wing fulvous yellow, irrorated with black scales the

ante- and postmedial pale lines waved, the latter excurved beyond the cell, the space between them and the apical area suffused with black, except the veins; a submarginal, pale, waved line. Hind wing deep black, with a broad, marginal, fulvous-yellow band.

♀ paler; abdomen with a large fulvous anal tuft; hind wing with broad pale fawn border.

Hab. Sikhim. *Exp.*, ♂ 42, ♀ 55 millim. Type in coll. Elwes.

1095. **Euproctis abjecta,** *Swinh. P. Z. S.* 1889, p. 405, pl. 43, fig. 13.

Head, thorax, and abdomen fuscous brown, the anal tuft orange. Fore wing vinous brown, irrorated with dark scales; the antemedial line angled on the median nervure, the postmedial line excurved beyond end of cell. Hind wing brownish ochreous.

Hab. Lower Sind. *Exp.*, ♂ 24, ♀ 30 millim.

*1096. **Euproctis rana,** *Moore, P. Z. S.* 1865, p. 806; *C. & S.* no. 952.

♂. Yellow; antennæ and abdomen brown. Fore wing with the basal two-thirds irrorated with dark scales and sending an elbowed spur to the centre of outer margin, below which the wing is whitish; ante- and postmedial pale lines. Hind wing with the inner area suffused with brown.

Hab. Sylhet. *Exp.* 63 millim.

b. *Fore wing with submarginal black spots.*

1097. **Euproctis bipartita,** *Moore, Lep. Atk.* p. 49, pl. ii, fig. 4; *C. & S.* no. 965.

♀. Head, thorax, and abdomen fulvous brown, the anal tuft fulvous. Fore wing reddish brown, irrorated with dark scales; the ante- and postmedial lines excurved in and beyond the cell; some specimens with a black speck in the cell; the apex and a narrow marginal line yellow; one subapical black spot. Hind wing yellow, often slightly suffused with brown, except the marginal area.

Hab. Sikhim. *Exp.* 52 millim.

F. *Fore wing uniform brown or purplish brown, irrorated with dark scales, the outer margin yellow, but no yellow on disk.*

a. *Fore wing without submarginal black spots.*

1098. **Euproctis sagroides,** *Hmpsn. Ill. Het.* viii, p. 57, pl. 140, fig. 14.

♂. Uniform yellowish brown; the cilia yellow.

Hab. Nilgiris. *Exp.* 22 millim.

1099. **Euproctis uniformis**, *Moore, Lep. Atk.* p. 49; *C. & S.* no. 973.

♀. Head, thorax, and abdomen brown; anal tuft orange. Fore wing vinous brown, irrorated with dark scales; the cilia yellow. Hind wing fuscous brown, with a broad, marginal, yellow band.

Hab. Sikhim; E. Pegu. *Exp.* 57 millim.

1100. **Euproctis luteifascia**, *Hmpsn. Ill. Het.* viii, p. 57, pl. 141, fig. 2.

♂. Head yellow; thorax brownish ochreous. Fore wing vinous brown, irrorated with dark scales; an antemedial, orange-red, maculate line; cilia yellow. Abdomen, hind wing, and underside yellow.

Hab. Nilgiris. *Exp.* 36 millim.

1101. **Euproctis scintillans**, *Wlk. Cat.* vii, p. 1734; *Butl. Ill. Het.* v, pl. 90, fig. 1; *C. & S.* no. 924.

Orvasca subnotata, *Wlk. Cat.* xxxii, p. 502; *C. & S.* no. 925.

Artaxa limbata, *Butl. Ill. Het.* v, p. 53, pl. 90, fig. 3; *C. & S.* no. 915.

Somena irrorata, *Moore, Lep. Ceyl.* ii, p. 87; *C. & S.* no. 923.

Artaxa justiciæ, *Moore, Lep. E. I. Co.* p. 352; *C. & S.* no. 914.

Head yellow; thorax brown; abdomen black or yellow, the anal tuft orange. Fore wing vinous brown, irrorated with dark scales, which colour extends as two spurs across the yellow marginal area below the apex and to centre of margin, but sometimes not reaching the margin; costa often yellow. Hind wing yellow, or in some specimens fuscous brown, with a broad yellow margin.

Larva dark brown, with a series of crimson lateral tubercles on a yellow line bearing tufts of grey hair; the 3rd somite banded with yellow; dorsal tufts of short brown hair on 4th, 5th, and 11th somites; 5th to 10th somites with a broad, dorsal, yellow stripe; a yellow spot on anal somite.

Another form of the larva has the anterior and posterior somites slate-colour, whilst a third form has the dorsal tufts black; a series of subdorsal, white-speckled, black spots, and no red tubercles on the lateral line.

Hab. Throughout India and Ceylon; Burma; Andamans. *Exp.*, ♂ 20–26, ♀ 32–38 millim.

*1102. **Euproctis basalis**, *Moore, Lep. Atk.* p. 51, pl. ii, fig. 16; *C. & S.* no. 904.

♂. Head, thorax, and palpi yellow; abdomen and legs whitish. Fore wing with the basal two-thirds red-brown, its outer edge oblique and angled outwards at the middle, and with a spot beyond the angle on the marginal yellow area. Hind wing and underside whitish.

Hab. Sikhim. *Exp.* 32 millim.

b. *Fore wing with submarginal black spots.*

1103. **Euproctis bipunctapex**, *Hmpsn. Ill. Het.* viii, p. 57, pl. 140, fig. 13.

Head, thorax, and abdomen red-brown, the anal tuft brownish yellow. Fore wing red-brown, irrorated with dark scales; the marginal area yellow, with a spur from the brown area to the centre of outer margin; two subapical black spots. Hind wing brown, with a broad, marginal, yellow band.

In some specimens a brown spot at the end of the cell of the fore wing is visible, and a male from the Nága Hills has only one subapical spot.

Hab. China; Kángra; Nágas; Nilgiris; Burma. *Exp.*, ♂ 24, ♀ 26–40 millim.

1104. **Euproctis atomaria**, *Wlk. Cat.* iv, p. 796; *Butl. Ill. Het.* v, pl. 90, fig. 2; *C. & S.* no. 903.
Arna apicalis, *Wlk. Cat.* v, p. 1177; *C. & S.* no. 902.

Differs from *bipunctapex* in being deeper red-brown, with the marginal yellow band of fore wing narrower, and in the hind wing reduced to a fine line.

Larva olive-green, sparsely clothed with fine hair; a broad, dorsal, reddish band with a fine black line on it; black dorsal tubercles on 4th, 5th, and 11th somites.

Hab. Moulmein; Ceylon. *Exp.*, ♂ 28–30, ♀ 38 millim.

1105. **Euproctis magna**, *Swinh. Trans. Ent. Soc.* 1891, p. 479.

♀. Head and thorax greyish fuscous; abdomen brownish, the anal tuft brownish ochreous. Wings purplish grey; fore wing irrorated with dark scales; one subapical black spot; the margin and cilia yellow. Hind wing with the outer margin paler.

A specimen from Burma has two subapical black spots and only the cilia yellow.

Hab. Khásis; Bernardmyo. *Exp.* 64 millim.

Genus **PORTHESIA**.

Porthesia, *Steph. Ill. Brit. Ent., Haust.* ii, p. 65 (1829).

Type, *P. auriflua*, Hübn., from Europe.

Range. Europe; Africa; Madagascar; throughout India, Ceylon, and Burma; Java; Australia; Tasmania; Christmas Island.

Palpi long, slender, and obliquely pointed; antennæ with the branches long in male. Fore wing with veins 3, 4, 5 from angle

of cell; 6 from upper angle; 7, 8, 9, 10 stalked, 10 and often 7 also being given off towards apex. Hind wing with veins 3 and 4 from angle of cell; 5 absent; 6 and 7 stalked.

1106. **Porthesia xanthorrhœa,** *Koll. Hügel's Kaschmir,* iv, p. 470; *C. & S.* no. 958.

Euproctis subdita, *Moore, P. Z. S.* 1879, p. 400; *id. Lep. Ceyl.* ii, pl. 112, figs. 5, 5*a*; *C. & S.* no. 930.

Euproctis virguncula, *Wlk. Cat.* iv, p. 836; *Moore, Lep. E. I. Co.* pl. 16, figs. 3, 3 *a* (larva); *C. & S.* no. 932.

Euproctis marginalis, *Wlk. Cat.* vii, p. 1731; *Butl. Ill. Het.* v, pl. 89, fig. 12; *C. & S.* no. 929.

Euproctis subnigra, *Moore, Lep. Atk.* p. 48; *C. & S.* no. 931.

Euproctis flavonigra, *Moore, P. Z. S.* 1879, p. 400, pl. 32, fig. 11; *C. & S.* no. 939.

♂. White, with a very slight fuscous tinge; the branches of antennæ brownish; anal tuft orange; the whole apical and outer areas of hind wing on upperside, and the underside of both wings, except the outer margin, suffused with black.

Fig. 322.
Porthesia xanthorrhœa, ♂. 1/1.

In the form *virguncula* the only trace of black suffusion on either wing is on the underside of costa of fore wing; in *flavonigra* the fore wing is bright ochreous, the hind wing black with the base white, the cilia ochreous; all the intermediate stages occurring.

♀ without any black suffusion.

Larva black; head striped with white; 1st somite with a crimson band; a dorsal series of yellow spots with a crimson line through them on 2nd, 3rd, and 6th to 10th somites; 1st somite with long forwardly-projecting tufts of black hair; the other somites with shorter tufts.

Hab. Throughout India, Ceylon, and Burma; Java. *Exp.*, ♂ 28, ♀ 37 millim.

1107. **Porthesia aurantiaca,** n. sp.

♂. Head and legs orange; thorax dark red-brown; abdomen blackish. Fore wing with the basal two-thirds bright orange; the outer third dark red-brown. Hind wing bright orange; the cilia tinged with red-brown, especially towards apex.

Hab. Sikhim. *Exp.* 24 millim. Type in coll. Moore.

Genus PERINA.

Perina, *Wlk. Cat.* iv, p. 966 (1855).

Type, *P. nuda*, Fabr.

Range. China; and throughout India and Ceylon.

♂. Palpi extremely minute; antennæ with the branches long. Mid and hind tibiæ with minute terminal pairs of spurs. Fore wing with the outer margin extremely oblique; vein 3 from before angle of cell; 4 and 5 on a short stalk; 6 from upper angle; 7, 8, 9, 10 stalked, 7 and 10 being given off towards apex. Hind wing with vein 3 from before angle of cell; 4 and 5 stalked; 6 absent.

♀. Antennæ with the branches shorter; fore wing with the outer margin not so oblique. Hind wing with veins 4 and 5 from angle of cell; 6 present and stalked with 7.

1108. **Perina nuda,** *Fabr. Mant. Ins.* ii, p. 117; *Moore, Lep. Ceyl.* ii, pl. 114, figs. 1, 1*a*, *b* (larva); *C. & S.* no. 867.
Stilpnotia subtincta, *Wlk. Cat.* iv, p. 843.
Perina basalis, *Wlk. Cat.* iv, p. 966.
Euproctis combinata, *Wlk. Cat.* xxxii, p. 347.

♂. Head and legs orange; antennæ black; thorax grey and brown; abomen brown, the segments fringed with white; anal tuft orange. Fore wing hyaline, with a patch of brown scales on inner basal area. Hind wing dark brown, with the apical area hyaline.

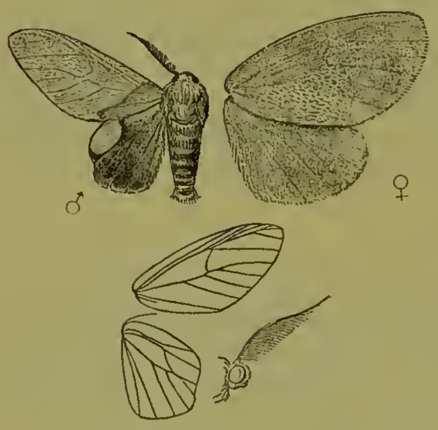

Fig. 323.—*Perina nuda.* ½.

♀. Pale ochreous; the anal tuft orange; fore wing irrorated with brown scales below the cell.

Larva greyish green, with short dorsal tufts of black hair and long anterior and posterior tufts; lateral tufts of grey and black hair; a dark sap-green dorsal band broken by a white line on thoracic somites and with red spots on its edge; 5th to 11th somites with subdorsal blue tubercles.

Pupa greenish; all the somites, except the two medial, red-brown below with paired black spots.

Hab. China and throughout India and Ceylon. *Exp.*, ♂ 38, ♀ 50 millim.

1109. **Perina pura,** *Wlk. Char. undescr. Het.* p. 17.

♂. Differs from *nuda* in the head, thorax, and abdomen being whitish; the scaled areas of wings white, suffused with fuscous.

♀. Much whiter than in *nuda*.

Hab. "N. India." *Exp.*, ♂ 30, ♀ 40 millim.

Genus LEUCOMA.

Leucoma, *Steph. Ill. Brit. Ent., Haust.* ii, p. 64 (1829).
Redoa, *Wlk. Cat.* iv, p. 826 (1855).
Kanchia, *Moore, Lep. Ceyl.* ii, p. 92 (1883).

Type, *L. vau-nigra*, Linn., from Europe.

Range. Palæarctic, Ethiopian, and Oriental regions; New Britian; New Ireland.

Palpi upturned, reaching vertex of head. Antennæ bipectinated in both sexes, the branches longer in male than female. Hind tibiæ with two pairs of spurs. Fore wing with vein 3 from before angle of cell; 4 and 5 from angle; 6 from upper angle; 7, 8, 9 stalked. Hind wing with vein 3 from before angle of cell; 5 from above angle; 6 and 7 stalked or from cell.

SECT. I. (*Leucoma*). Fore wing with vein 10 from the cell.

1110. **Leucoma comma**, *Hutton, Trans. Ent. Soc.* (3) ii, 1864, p. 330; *C. & S.* no. 1108.
Redoa cygna, *Moore, P. Z. S.* 1879, p. 401; *C. & S.* no. 1049.

♂. Pure glistening white; frons, palpi, and coxæ of fore legs

Fig. 324.—*Leucoma comma*, ♂. 1/1.

orange; fore and mid tibiæ with a black spot. Fore wing with a black lunule on discocellulars; branches of antennæ brownish.

Hab. Dehra Dún; Nilgiris. *Exp.* 42 millim.

SECT. II. (*Redoa*). Fore wing with vein 10 anastomosing slightly with 8 and 9 to form an areole.

1111. **Leucoma submarginata**, *Wlk. Cat.* iv, p. 826; *Butl. Ill. Het.* v, pl. 89, fig. 3; *Moore, Lep. E. I. Co.* pl. 14, figs. 11, 11 *a* (larva); *C. & S.* no. 1055.

Pure white; palpi brownish; two brown spots on frons, and a brown band between the antennæ, which have the branches brownish; legs spotted with black. Fore wing irrorated with silvery scales; a black speck at end of cell; costa ochreous towards apex; the wing-membrane slightly corrugated on outer area; cilia of both wings more or less tinged with fuscous.

Larva pale fuscous, with long, scattered, simple, and spatulate hairs; a dorsal tuft of long black hairs from the second somite;

subdorsal and sublateral black lines; the first and second somites banded with black in front; the second somite with a yellow band also.

Hab. Throughout India, Ceylon, Burma, and Java. *Exp.*, ♂ 42, ♀ 50 millim.

1112. **Leucoma flavescens,** *Moore, P. Z. S.* 1877, p. 600; *C. & S.* no. 1052.

Redoa sericea, *Moore, P. Z. S.* 1877, p. 600; *C. & S.* no. 1054.

♂. Differs from *submarginata* in the whole frons being dark; the wings whiter and evenly irrorated with silvery scales; the outer area of fore wing with slight indications of corrugations.

The form *flavescens* is yellowish, whilst *sericea* is pure white, with the costa of fore wing yellowish.

Hab. Andamans. *Exp.* 34 millim.

1113. **Leucoma divisa,** *Wlk. Cat.* iv, p. 836; *C. & S.* no. 938.

Redoa perfecta, *Wlk. Journ. Linn. Soc.* vi, p. 128.
Redoa lactea, *Moore, Lep. Atk.* p. 46; *C. & S.* no. 1053.
Redoa cymbicornis, *Butl. Ill. Het.* v, p. 48, pl. 89, fig. 2; *C. & S.* no. 1050.
Redoa nigricilia, *Swinh. Trans. Ent. Soc.* 1891, p. 478.
Penora silhetica, *Wlk. Cat.* xxxii, p. 341; *C. & S.* no. 1066.

Palpi and frons slightly fuscous. Antennæ with the branches pale ochreous; legs white, the fore legs sometimes spotted with black, and the tarsi sometimes ringed with fuscous. Wings clothed with silvery and white scales, which drop off, except in quite fresh specimens, leaving the wings quite hyaline, except for a few hair-like scales.

Hab. Sikhim; Borneo. *Exp.*, ♂ 40–50, ♀ 50–70 millim.

1114. **Leucoma diaphana,** *Moore, Lep. Atk.* p. 46; *C. & S.* no. 1051.

♂. Differs from *divisa* in the frons and costa of fore wing being orange; the branches of antennæ and legs tinged with orange. Wings diaphanous, with a few hair-like scales.

In the specimen from Burma patches of scales remain at the upper and lower angles of cell of both wings.

Hab. Sikhim; Bernardmyo, Burma. *Exp.* 44 millim.

1115. **Leucoma thyridophora,** n. sp.

♀. Head, thorax, and abdomen yellowish white. Fore wing wholly occupied by an extremely irregular hyaline patch, except the margins; two antemedial ridges of scales and a band on the discocellulars, which are ochreous white, with numerous slight ridges of raised scales; a few dark scales at upper angle of cell and centre of inner margin; an indistinct submarginal line with a dark striga on it near outer angle. Hind wing ochreous white,

with an extremely irregular hyaline patch in and beyond the end of cell.

Hab. Sikhim. *Exp.* 50 millim. Type in coll. Elwes.

1116. **Leucoma fenestrata,** *Hmpsn. Ill. Het.* ix, ined., pl. 160, fig. 16.

♀. Pale reddish white. Fore wing with a large irregular hyaline patch in and beyond the end of cell and a hyaline subapical spot; a chestnut spot at end of cell and numerous indistinct ridges of raised scales. Hind wing with a smaller hyaline patch in and beyond the end of cell.

Hab. Ceylon. *Exp.* 38 millim.

Sect. III. (*Kanchia*). Fore wing with vein 10 arising from 11 and anastomosing slightly with 8 and 9 to form an areole.

1117. **Leucoma subvitrea,** *Wlk. Cat.* xxxii, p. 344; *Moore, Lep. Ceyl.* ii, pl. 113, fig. 5; *C. & S.* no. 1088.

♀. Head, thorax, and abdomen pure white. Wings almost without scales, the few there are being hair-like; the membrane iridescent; veins apple-green during life.

Hab. Hongkong; Bengal; Nilgiris; Ceylon. *Exp.* 38–42 millim.

Genus CAVIRIA.

Caviria, *Wlk. Cat.* iv, p. 824 (1855).
Caragola, *Moore, Lep. Atk.* p. 46 (1879).

Type, *C. substrigosa,* Wlk., from Brazil.

Range. S. America; N.E. India; Ceylon; Burma; Andamans; Java.

Palpi minute and porrect. Antennæ bipectinated, the branches longer in male than female. Hind tibiæ with one pair of spurs. Fore wing with vein 3 from before angle of cell; 4 and 5 from angle; 6 from upper angle; 7, 8, 9 stalked. Hind wing with vein 3 from before angle of cell; 4 and 5 from angle; 6 and 7 from upper angle.

Sect. I. (*American*). Fore wing with vein 10 rising from 11 and giving off 9 to anastomose with 8 and form the areole.

Sect. II. Fore wing with veins 7, 8, 9 stalked; 10 and 11 free from cell.

1118. **Caviria cygna,** *Moore, P. Z. S.* 1877, p. 601; *Hmpsn. Ill. Het.* ix, ined., pl. 159, fig. 6; *C. & S.* no. 1064.

♂. Head and thorax pure white; antennæ brown; abdomen fulvous; fore legs bright orange. Fore wing with the basal area white from the costa before middle to outer angle, the rest of the

wing hyaline, with traces of a postmedial band of silvery scales. Hind wing pure white.

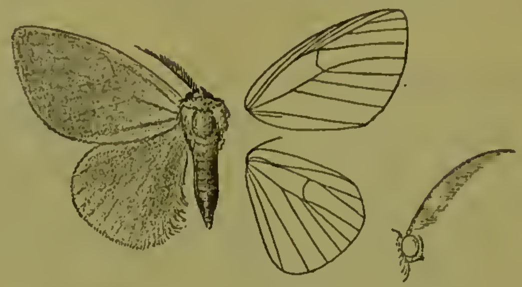

Fig. 325.—*Caviria cygna*, ♂. 1/1.

♀. The whole fore wing pure white; three raised bands of silvery-white scales on outer half of wing.
Hab. Ceylon; Andamans. *Exp.*, ♂ 42, ♀ 44 millim.

1119. **Caviria clara**, *Wlk. Cat.* xxxii, p. 343; *C. & S.* no. 1048.

Head, thorax, and abdomen pure white; palpi and legs orange; branches of antennæ pale brown. Wings silvery white. Fore wing with two very obliquely curved raised bands of silvery-white scales beyond the cell.
Hab. Sikhim. *Exp.*, ♂ 36, ♀ 48 millim.

1120. **Caviria sericea**, *Moore, Lep. Atk.* p. 45; *C. & S.* no. 1073.

♂. Pure silvery white; palpi and inner sides of fore legs black. Fore wing without raised bands of scales.
Hab. Sikhim. *Exp.* 38 millim.

1121. **Caviria ochripes**, *Moore, Lep. Atk.* p. 45; *C. & S.* no. 1072.

♂. Pure white; the palpi, fore legs, and tarsi of mid and hind legs bright orange.
♀. The frons, costa, and apex of fore wing tinged with fuscous in some specimens.
Hab. Sikhim; Nága Hills; Momeit, Burma. *Exp.*, ♂ 40, ♀ 50 millim.

1122. **Caviria rinaria**, *Moore, Lep. E. I. Co.* p. 336.
Redoa dica, *Swinh. Trans. Ent. Soc.* 1891, p. 478.

♂. Head, thorax, and abdomen white; shaft of antennæ chequered brown and white, the branches brownish; legs marked with brown. Fore wing silvery white, with three very oblique crenulated bands on outer half of wing, the middle band with an indistinct brown line on it; two indistinct subapical specks; costa brown; tips of cilia brown. Hind wing white; the tips of cilia brown at middle.

♀ with the antennæ white.
Hab. Khásis; Java. *Exp.*, ♂ 42, ♀ 60 millim.

Sect. III. Fore wing with veins 4 and 5 stalked.

*1123. **Caviria costalis**, *Moore, Lep. Atk.* p. 46, pl. ii, fig. 21; *C. & S.* no. 1078.

♂. Pure silky white. Fore wing with the costal edge black and folded over near apex; the base slightly tinged with ochreous; the veins raised above the surface. Body ochreous white; antennæ with the branches ochreous; palpi at sides and head below, black; fore legs black above.
Hab. Sikhim. *Exp.* 50 millim.

Genus **DENDROPHLEPS**, nov.

Type, *D. semihyalina*, Hmpsn.
Range. Khásis.
Palpi short and porrect. Antennæ with the branches of moderate length. Hind tibiæ with one pair of spurs. Fore wing with vein 3 from before angle of cell; 4 and 5 stalked; 6 from upper angle; 7, 8, 9 stalked. Hind wing with vein 3 from close to angle of cell; 4 and 5 stalked; 6 and 7 stalked and bent; the cell long; three or four veinlets between vein 1 *a* and inner margin.

1124. **Dendrophleps semihyalina**, n. sp.

♂. Head, thorax, and abdomen white; branches of antennæ

Fig. 326.—*Dendrophleps semihyalina*, ♂. $\frac{1}{1}$.

black; vertex of thorax with three black spots; abdomen with dorsal black bands. Fore wing hyaline; a white patch on basal inner area. Hind wing with the costal half hyaline; the inner half white.

Hab. Khási Hills (*Hamilton*). *Exp.* 52 millim. Type in coll. Swinhoe.

Genus CISPIA.

Cispia, *Wlk. Cat.* iv, p. 857 (1855).
Caltura, *Moore, P. Z. S.* 1879, p. 401.

Type, *C. punctifascia*, Wlk.
Range. Sikhim; Bhutan; Assam; Nilgiris; Ceylon.

Palpi porrect, the 2nd joint long and fringed with hair, the 3rd minute; or the palpi rarely minute. Antennæ bipectinate in both sexes, the branches long. Fore wing with veins 3, 4, 5 from close to angle of cell; 6 from upper angle; 7, 8, 9, 10 stalked, 10 being given off from nearer the cell or from the same point as 7. Hind wing with vein 3 from before angle, 5 from above it.

SECT. I. Hind tibiæ with two pairs of spurs. Hind wing with veins 6 and 7 from cell.

1125. **Cispia punctifascia,** *Wlk. Cat.* iv, p. 857; *Moore, Lep. Ceyl.* ii, pl. 113, fig. 3; *C. & S.* no. 926.

Head, thorax, and abdomen orange. Antennæ black, the shaft white at sides; collar, thorax, and tegulæ black spotted; abdomen

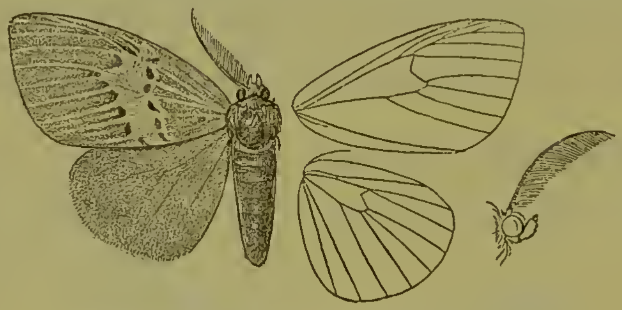

Fig. 327.—*Cispia punctifascia*, ♂. 1/1.

with a lateral series of black spots; legs marked with black. Fore wing brownish orange, the veins pale yellow; two black subbasal spots; an orange medial band edged by red-brown strigæ in the interspaces, with a pale line outside them. Hind wing orange, with a curved postmedial maculate band from the costa to vein 2 on underside.

Hab. Sikhim; Bhutan; Assam; Ceylon. *Exp.*, ♂ 50, ♀ 70 millim.

1126. **Cispia venosa,** *Wlk. Trans. Ent. Soc.* (3) i, 1862, p. 264; *C. & S.* no. 928.

Differs from *punctifascia* in being bright orange. Fore wing bright orange, the band broader and the strigæ edging it only slightly darker than the ground-colour. Underside of both wings with a fuscous maculate band, the apex of fore wing fuscous.

Hab. Sikhim. *Exp.* 70 millim.

1127. **Cispia alba**, *Moore, P. Z. S.* 1879, p. 401; *id. Lep. Ceyl.* ii, pl. 114, figs. 2, 2 *a*, *b* (larva); *C. & S.* no. 1085.

White; tegulæ and thorax spotted with black. Abdomen with dorsal and lateral series of black spots. Wings semidiaphanous. Fore wing with three black basal spots; an angled antemedial line; a black striga at upper angle of cell; an oblique line from near apex to centre of inner margin; both wings with a marginal series of black spots.

Larva pale green, sparsely clothed with black and brown hair, the anterior and posterior tufts of hair long; the lateral tufts arising from three series of red tubercles; some slender dorsal and lateral white lines; a whitish spot in front of each dorsal tuft.

Pupa bluish grey and hairy, with black lines on head and front, and strigæ on the somites.

Hab. Ceylon. *Exp.*, ♂ 44, ♀ 66 millim.

Sect. II. Hind tibiæ with one pair of spurs. Hind wing with veins 6 and 7 from cell.

1128. **Cispia puncticilia**, *Moore, P. Z. S.* 1872, p. 575; *C. & S.* no. 3745.

White; the branches of antennæ brownish; legs streaked with black. Wings semidiaphanous. Fore wing with a black line along the basal half of costa; a spot at middle of cell, and six spots on cilia. Hind wing with a black apical spot on cilia.

Hab. Nilgiris. *Exp.*, ♂ 30, ♀ 34 millim.

Sect. III. Hind tibiæ without spurs. Hind wing with veins 6 and 7 on a long stalk; palpi minute.

1129. **Cispia flavipes**, n. sp.

♀. Head, thorax, and abdomen white; legs orange-yellow. Wings semidiaphanous white. Fore wing with the basal three-fourths of costa black, the apical portion spotted with black; both wings with a black spot on discocellulars and marginal series of spots.

Hab. Sikhim. *Exp.* 52 millim. Type in coll. Elwes.

Genus RATARDA.

Ratarda, *Moore, P. Z. S.* 1879, p. 392.

Type, *R. marmorata*, Moore.

Range. Sikhim.

Palpi minute and porrect; antennæ bipectinate in male, serrate in female. Frenulum absent. Wings long and narrow. Fore wing with vein 1 *c* present; the veins bent; 3 from before angle of cell; 5 from above angle; 6 from middle of discocellulars; 7

absent; 8, 9, 10 stalked. Hind wing with three internal veins; 3 from before angle of cell, 5 from above angle; 6 from below upper angle; a veinlet in the cell of both wings.

1130. **Ratarda marmorata**, *Moore, P. Z. S.* 1879, p. 393, pl. 32, fig. 1; *C. & S.* no. 365.

Head, thorax, and abdomen smoky black; the legs yellowish. Fore wing black-brown, irrorated with white scales, and with a

Fig. 328.—*Ratarda marmorata*, ♂. 1/1.

number of white spots on the medial area, many of which are conjoined. Hind wing with the basal area white, slightly irrorated with black scales; the outer area black-brown, irrorated with white scales.

Hab. Sikhim. *Exp.* 54 millim.

Species formerly recorded as Indian which are omitted.

Euproctis atomaria, Wlk., C. & S. no. 934, is from Java.
Euproctis kargalica, Moore, C. & S. no. 943, is from Turkestan.
Euproctis lactea, Moore, C. & S. no. 944, is from Turkestan.
Euproctis tinctifera, Wlk., C. & S. no. 954. Type lost; description not recognizable.
Genusa bigutta, Wlk., C. & S. no. 893, is a Geometer.
Penora venosa, Wlk., C. & S. no. 1067, is from America.
Trisuloides catocalina, Moore, C. & S. no. 1081 = *sericea*, Butl., C. & S. no. 1082, is a Noctua.
Trisuloides cærulea, Butl. Ill. Het. vii, p. 35, is a Noctua.
Porthetria brotea, Cram., C. & S. no. 1024, is from Amboina.
Lymantria lunata, Cram., C. & S. no. 1010, is from China and Amboina.
Antipha promittens, Wlk., C. & S. no. 1042. Type lost; description not recognizable.
Antipha strigulifera, Wlk., C. & S. no. 1043. Type lost; description not recognizable.
Trichia exigua, Nietn., C. & S. no. 1080. Description not recognizable.

Family HYPSIDÆ.

Proboscis present. Palpi smoothly scaled; the third joint long and naked. Legs smooth; mid tibiæ with one pair of spurs, hind tibiæ with two pairs. Frenulum present. Fore wing with vein 1 *a* separate from 1 *b*; 1 *c* absent; 5 from near the lower angle of cell. Both sexes with the membrane above inner margin forming a cavity with a ridge above it, probably for producing stridulation by friction against a ridge of membrane below the costa of hind wing. Hind wing with veins 1 *a* and *b* present, 1 *c* absent; 5 from near lower angle of cell; 8 free from the base and connected by a bar with 7 at middle of cell.

Larva with all the fore legs present, and sparsely covered with long hairs.

Cocoon slight.

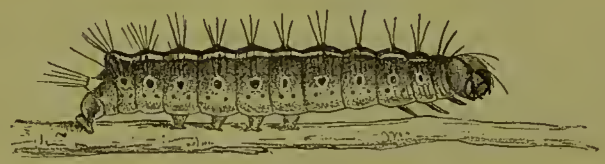

Fig. 329.—Larva of *Hypsa alciphron*. $\frac{1}{1}$. (From Moore, Lep. Ceyl. ii, p. 102, fig. 1 *b*.)

Key to the Genera.

a. Fore wing with no areole, veins 6 and 7 stalked . 1. EUPLOCIA, p. 495.
b. Fore wing with vein 7 from an areole.
 a'. Palpi with the 2nd joint reaching above vertex of head .... 2. PERIDROME, [p. 496.
 b'. Palpi with the 2nd joint reaching vertex of head.
  a^2. Hind wing with veins 6 and 7 from angle of cell .... 3. HYPSA, p. 498.
  b^2. Hind wing with veins 6 and 7 stalked .... 4. DIGAMA, p. 504.

Genus **EUPLOCIA**.

Euplocia, *Hübn. Verz.* p. 172 (1818).

Type, *E. membliaria*, Cram.

Range. Burma; Siam; Andamans; Java; Philippines.

Palpi upturned; the second joint reaching vertex of head, the third long and slender. Antennæ minutely ciliated. Fore wing with a costal fold on upperside in male usually containing a glandular tuft of long hairs; veins 6 and 7 stalked; 8 and 9 stalked; no areole. Hind wing with veins 6 and 7 from the angle of cell.

1131. **Euplocia membliaria**, *Cram. Pap. Exot.* iii, pl. 269 C, D; *C. & S.* no. 513.

Aganais renigera, *Feld. Reis. Nov., Lep.* pl. 106, fig. 2.
Euplocia moderata, *Butl. Trans. Ent. Soc.* 1875, p. 327.
Euplocia inconspicua, *Butl. Trans. Ent. Soc.* 1875, p. 328.

♂. Head black and grey; thorax and abdomen orange; tegulæ each with a black spot; abdomen with a dorsal series of black

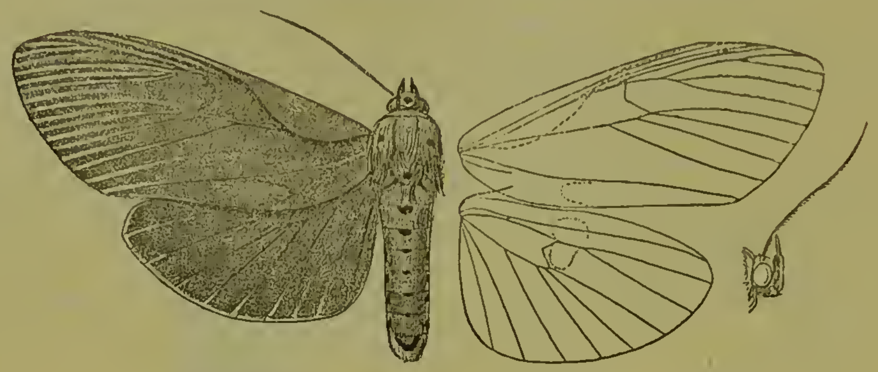

Fig. 330.—*Euplocia membliaria*, ♂. $\frac{1}{1}$.

spots, some of which are often absent, the extremity white. Fore wing greyish fuscous; discocellulars streaked with orange; the veins and interspaces towards outer margin streaked with white; cilia fuscous. Hind wing fuscous, the veins and interspaces with short white streaks towards outer margin; cilia white.

♀ with the base of costa white, with five black strigæ; cell orange, with a black spot at centre and a large subquadrate fuscous spot towards extremity.

The form *renigera*, from Java, has the yellow band of female on discocellulars of fore wing small. In *moderata*, also from Java, the costal fold of the male is smaller, the discocellular band of female separated from the orange patch in cell; *inconspicua*, again from Java, has in the male the costal fold very slight, the tuft of hair absent; in the female the discocellular band absent.

Hab. Moulmein; Siam; Andamans; Java; Philippines. *Exp.*, ♂ 74, ♀ 77 millim.

Genus PERIDROME.

Peridrome, *Wlk. Cat.* ii, p. 444 (1854).
Anagnia, *Wlk. Cat.* ii, p. 446 (1854).
Aganopis, *Herr.-Schäffer, Samml. ausser. Schm.* i, pp. 12, 70 (1855).
Eriocrypta, *Herr.-Schäffer, t. c.* pp. 12, 70 (1855).

Type, *P. orbicularis*, Wlk.

Range. N. India; Burma; Andamans.

Palpi upturned and long, the second joint reaching above vertex of head. Antennæ ciliated in male, almost simple in female. Fore wing with vein 6 from the angle of cell, 7 and 10 from the areole which is formed by the anastomosis of veins 8 and 9. Hind wing with veins 6 and 7 from the angle of cell.

SECT. I. (*Peridrome*). Fore wing of male broad, the whole area except the base covered with downy scales, which are very long near the costa.

1132. **Peridrome orbicularis**, *Wlk. Cat.* ii, p. 445; *Moore, Lep. E. I. Co.* pl. xiii, fig. 10 (larva); *C. & S.* no. 512.
Aganopsis subquadrata, *Herr.-Schäffer, Samml. aussereur. Schmett.* i, p. 12, fig. 501.
Eriocrypta longipennis, *Herr.-Schäffer, t. e.* p. 12.

♂. Head black and white; thorax and abdomen orange; collar and tegulæ with paired black spots; metathorax fringed with white; abdomen with three black dorsal spots and the extremity black. Fore wing with the basal area orange; three black and white spots below the costa; three black spots below median nervure and two black and white spots on inner margin; the outer two-thirds of wing brown covered with mouse-coloured hair, the veins and interspaces slightly streaked with white. Hind wing with the inner area orange; a black patch in the cell; the apical area yellowish white; a fuscous patch and spot at anal angle. Underside: body white marked with black; the outer area of fore wing white.

♀. Abdomen with a black dorsal spot on each segment. Fore wing with the basal orange patch large, irregular, and outlined with white; two black spots in the cell, four below it, and two on inner margin; the basal half of costa spotted with black and white; the white streaks on veins and in interspaces more prominent. Hind wing orange, with two black spots in cell, one beyond and two towards anal angle; a broad marginal black band with the veins crossing it white. Underside with the outer area of fore wing not white.

Larva. Head and first somite reddish, the others black with sparse blue-black hairs; broad yellowish-white intersomital bands which join a lateral line; legs and pro-legs yellowish.

Hab. Sikhim; Assam; Burma; Andamans. *Exp.*, ♂ 74, ♀ 78 millim.

SECT. II. (*Anagnia*). Antennæ of male with a tuft of scales at middle; fore wing narrower, with the apex not covered with down. Hind wing with a large glandular patch beyond the end of cell, which is short.

1133. **Peridrome subfascia**, *Wlk. Cat.* ii, p. 446; *C. & S.* no. 539.

♂. Differs from *orbicularis* in the fore wing having only one black spot on the orange patch; the downy scales chestnut colour, the apex and outer margin fuscous; the veins crossing it white. Hind wing with a black patch in the cell, the glandular tuft beyond brown; the marginal area blackish crossed by the white veins; no black spot towards anal angle. Underside with the outer area of fore wing not white.

♀ with the orange patch of fore wing not extending so far along inner margin.

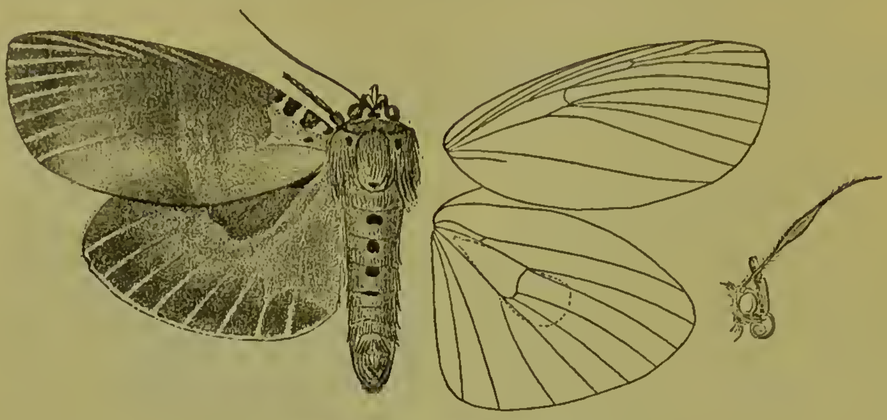

Fig. 331.—*Peridrome subfascia*, ♂. ½.

Hab. Moulmein; Tenasserim. *Exp.*, ♂ 74, ♀ 80 millim.

Genus **HYPSA**.

Hypsa, *Hübn. Verz.* p. 172 (1818).
Neochera, *Hübn. Verz.* p. 173 (1818).
Damalis, *Hübn. Verz.* p. 172 (1818).
Lacides, *Wlk. Cat.* ii, p. 456 (1854).
Philona, *Wlk. Cat.* ii, p. 456 (1854).
Agape, *Feld. Reis. Nov.* pl. cvi, fig. 4, *Erkl.* p. i (1874).

Type. *H. monycha*, Cram.

Range. Africa; throughout India, Ceylon, and Burma; Malayan and tropical portions of Australian region.

Palpi upturned, the second joint reaching vertex of head, the third slender and variable in length. Antennæ fasciculated in male, ciliated in female. Fore wing with vein 5 from the lower angle of cell or just above it; 6 from the upper angle or below it; the areole short. Hind wing with vein 5 from just above lower angle of cell; 6 and 7 from the upper angle.

Sect. I. (*Hypsa*). Antennæ of male with the fasciculated cilia short.

A. *Palpi with the 3rd joint of moderate length.*

1134. **Hypsa marmorea**, *Wlk. Cat.* vii, p. 1674; *Butl. Ill. Het.* v, pl. 87, figs. 10, 11; *C. & S.* no. 515.

♂. Head black and grey; thorax orange; collar banded with black; two black spots on each tegula and two on vertex; abdomen orange-yellow, with one dorsal and two paired lateral series of black spots. Fore wing fuscous with a blue-green sheen; the veins white; an orange patch at base with two black spots on its

edge. Hind wing fuscous with a blue-green sheen; the veins and inner area white; a patch of black scales at end of cell.

Hab. Throughout N.E. India and Burma; Java. *Exp.* 71–82 millim.

1135. **Hypsa butleri,** *Swinh. Lep. Het. Mus. Oxon.* p. 84.

Differs from *marmorea* in the head and thorax being more or less suffused with white; one black spot on each tegula and only one on vertex of thorax. Fore wing with the ground-colour much paler. Hind wing white, with a black spot at end of cell, and a marginal series of detached blue-black spots. Underside with blue-green fasciæ and bands.

Hab. Moulmein; Penang. *Exp.* 70 millim.

1136. **Hypsa dominia,** *Cram. Pap. Exot.* iii, pl. 263 A, B; *C. & S.* no. 514.

Noctua chione, *Fabr. Spec. Ins.* ii, p. 213.

Differs from *butleri* in the head, thorax, and base of abdomen being pure white. Fore wing pure white; the basal black spots present, but no orange patch. Hind wing with the blue-green spots produced towards the base in the interspaces below the cell.

Hab. Sikhim; Assam; S. India; Burma; Java. *Exp.* 76 millim.

B. *Palpi with the 3rd joint very long.*

1137. **Hypsa monycha,** *Cram. Pap. Exot.* ii, pl. 131 c (1779); *C. & S.* no. 521.

Noctua dama, *Fabr. Spec. Ins.* ii, p. 216 (1781).
Bombyx silvandra, *Cram. Pap. Exot.* iv, pl. 369 D; *C. & S.* no. 525.
Hypsa intacta, *Wlk. Cat.* ii, p. 451.
Hypsa dicta, *Butl. Trans. Ent. Soc.* 1875, p. 316.
Hypsa zebrina, *Butl. P. Z. S.* 1877, p. 815.
Aganais vitessoides, *Snell. Tijd. v. Ent.* xxii, 1879, p. 78.
Hypsa nicobarica, *Swinh. Lep. Mus. Oxon.* p. 87.
Hypsa venalba, *Moore, P. Z. S.* 1877, p. 598; *C. & S.* no. 527.
Hypsa semifusca, *Butl. A. M. N. H.* (5) xix, p. 220.
Hypsa leuconeura, *Butl. P. Z. S.* 1879, p. 161.

Head, thorax, and abdomen orange; palpi with a black lateral stripe on second joint and the third joint black; a black spot on tegulæ; a dorsal series of black spots on abdomen often expanding into bands. Fore wing fuscous; an indistinct basal orange patch often suffused with fuscous, with two basal black spots and three on its outer edge; a broad white fascia from base to lower angle of cell; subcostal, median, and submedian nervures sometimes slightly streaked with white. Hind wing white, with a fuscous spot at end of cell; a broad fuscous marginal band with irregular inner edge.

The form *silvandra* has the white fascia of fore wing represented by a white spot at lower angle of cell and the marginal band of hind wing broad. In *intacta* from Java the fascia is narrow, in

vitessoides from Java absent; *venalba*, from the Andamans, has the fascia very broad and extending along vein 2 nearly to outer margin, a smaller spot at upper angle of cell; *dama*, from Australia and the Solomons, has the fascia slight or absent, the spot at lower

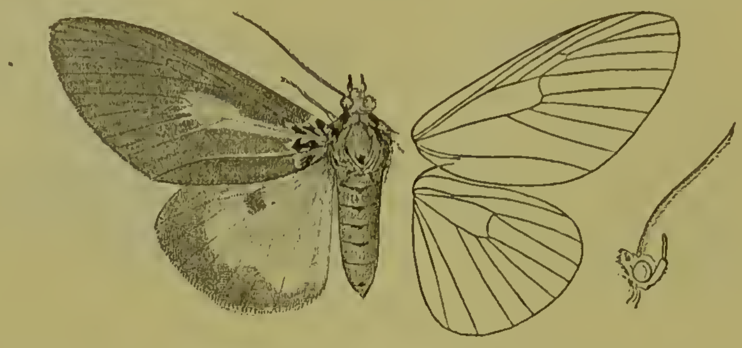

Fig. 332.—*Hypsa monycha*, ♂. $\frac{1}{1}$.

angle of cell large; *semifusca*=*leuconeura*, from the Solomons, has the marginal band of hind wing very broad.

Hab. China; Formosa; N.E. India; Burma; Nicobars; Java; Amboina; Australia; Solomons. *Exp.* 60 millim.

1138. **Hypsa clavata**, *Butl. Trans. Ent. Soc.* 1875, p. 317; *C. & S.* no. 518.

♂. Differs from *monycha* in the palpi having a black lateral stripe. Fore wing with the veins below the costa streaked with white. Hind wing with a black spot in end of cell and two postmedial spots.

Hab. Hongkong; Cachar; Sylhet. *Exp.* 66 millim.

1139. **Hypsa canaraica**, *Moore, P. Z. S.* 1878, p. 3; *C. & S.* no. 517.

♀. Differs from *clavata* in being paler; the middle black basal costal spot absent; the white patch at end of cell large; no fascia along median nervure. Hind wing with a black band connecting the postmedial spots.

Hab. Canara; Nilgiris. *Exp.* 75 millim.

1140. **Hypsa complana**, *Wlk. Cat.* xxxi, p. 213.

Hypsa persecta, *Butl. Trans. Ent. Soc.* 1875, p. 317; *Moore, Lep. Ceyl.* ii, pl. 100, figs. 1, 1 *a* (larva); *C. & S.* no. 523.

Hypsa lacteata, *Butl. Ill. Het.* v, p. 43, pl. 87, fig. 9; *C. & S.* no. 520.

Differs from *clavata* in the fore wing having a large white patch filling the lower half of cell and the whole area below except inner margin, and extending to near outer margin, its upper edge with two dentitions, its outer edge irregular; a large white spot at upper angle of cell. Hind wing with the marginal band narrow; an extra spot towards anal angle.

Larva. Head large; sparsely hairy; dark purple-brown, the thoracic somites pale red; a narrow transverse yellow band on 4th to terminal somites.

Hab. China; Sikhim; Assam; Orissa; Nilgiris; Ceylon; Rangoon; Singapore; Bouru; Timor. *Exp*., ♂ 60–70, ♀ 74 millim.

1141. **Hypsa tortuosa,** *Moore, P. Z. S.* 1872, p. 570, pl. 33, fig. 2; *C. & S.* no. 516.

♂. Differs from *complana* in the head and thorax being deeper orange; collar outlined with black; tegulæ with a black streak. Fore wing with the basal orange patch larger and deeper in colour with more black spots on it; an exceedingly irregular white band from the costa to inner margin. Hind wing white, with a black spot at end of cell, a submarginal spot, and two towards anal angle; a marginal series of eight spots.

Hab. Sikhim. *Exp*. 72 millim.

1142. **Hypsa heliconia,** *Linn. Syst. Nat.* i, 2, p. 839; *C. & S.* no. 519.
Noctua paphos, *Fabr. Ent. Syst.* iii, 2, p. 18; *C. & S.* no. 522.

Differs from *monycha* in the basal orange patch of the fore wing being prominent but not extending to the costa, the black spots edged with white; the veins streaked with white; a white stripe along inner margin. Hind wing white, with a large black spot at end of cell, one beyond, and one below vein 2; a marginal black band, broad at apex and bent inwards between veins 1 *b* and 2, leaving a white spot on the margin.

Hab. Sikhim; Assam; Burma; Siam; Singapore; Borneo; Ceram; New Guinea. *Exp*. 68 millim.

1143. **Hypsa subsimilis,** *Wlk. Cat.* xxxi, p. 212; *C. & S.* no. 526.

Differs from *monycha* in having the ground-colour of the hind wing yellow.

Hab. Tenasserim; Malacca; Singapore. *Exp*. 64 millim.

1144. **Hypsa egens,** *Wlk. Cat.* ii, p. 453; *Butl. Ill. Het.* v, pl. 87, fig. 8; *Moore, Lep. E. I. Co.* pl. xiii, fig. 7 (larva); *C. & S.* no. 531.
Hypsa nebulosa, *Butl. Tr. Ent. Soc.* 1875, p. 322; *C. & S.* no. 533.

Orange-yellow; the head, thorax, and abdomen marked as in *monycha*. Fore wing with five black spots near the base; the veins streaked with yellow.

Larva brown; numerous small dorsal warts from which arise sparse hairs; large prominences on 4th and 11th somites; a sub-lateral dark line and lateral series of dark spots; head reddish.

Hab. Formosa; throughout N.E. India and Burma; Siam; Singapore; Philippines; Borneo; Java; Celebes. *Exp*., ♂ 46–64, ♀ 74 millim.

1145. **Hypsa andamana,** *Moore, P. Z. S.* 1877, p. 598, pl. 59, fig. 5; *C. & S.* no. 529.

♂. Differs from *egens* in having an extra black spot at middle of cell of fore wing; the interspaces beyond and below streaked with fuscous.

Hab. Andamans. *Exp.* 67 millim.

1146. **Hypsa concana,** *Moore, P. Z. S.* 1878, p. 4; *Waterh. Aid,* ii, pl. 132, fig. 7; *C. & S.* no. 530.

♀. Differs from *egens* in having a black spot on the metathorax. Fore wing with a waved antemedial white line, with an extra black spot inside it near inner margin; two white spots at end of cell. Hind wing with a black spot at end of cell; an elongate spot below vein 2; a postmedial series from beyond the cell to near anal angle, with a series of whitish lunules beyond them. Cilia of both wings white.

Hab. Canara; Nilgiris. *Exp.* 76 millim.

1147. **Hypsa javana,** *Cram. Pap. Exot.* iii, pl. 274 C; *C. & S.* no. 532.

♂. Head and thorax yellow with the usual black spots; abdomen black above, the extremity orange-yellow, the ventral surface yellow with paired sublateral series of black spots. Fore wing yellow; a brown patch occupying the whole wing except the base, which is spotted with black, and the costa and outer area; a large round white spot in centre of cell; an oval spot at end. Hind wing brown; a broad marginal yellow band.

Hab. Moulmein; Java. *Exp.* 66 millim.

1148. **Hypsa alciphron,** *Cram. Pap. Exot.* ii, p. 133 E; *Moore, Lep. Ceyl.* ii, pl. 102, figs. 1, 1 *a*, *b* (larva); *C. & S.* no. 528.
Noctua caricæ, *Fabr. Ent. Syst.* iii, 2, p. 27.
Hypsa plaginota, *Butl. Trans. Ent. Soc.* 1875, p. 320; *C. & S.* no. 534.

Head, thorax, and abdomen marked as in *monycha*; palpi with black spots on 1st and 2nd joints. Fore wing brownish fuscous; a basal orange patch with two subbasal black spots and a series of three on its outer edge; the veins streaked with white; a white spot at lower angle of cell. Hind wing orange-yellow; a black spot at end of cell, one beyond, one below vein 2, and a submarginal irregular series which sometimes becomes a nearly complete marginal band, the veins crossing it yellow.

The variety *plaginota* has the white spot at end of cell of fore wing large. The form from New Guinea and the neighbouring groups of islands is darker and brighter.

Larva black above, brown below; two dorsal white bands, a

subdorsal black spot on each somite; a series of lateral black specks; sparse black hairs; the head red.

Hab. Throughout India, Ceylon, and Burma; Penang; Java; Amboina; Ceram; New Guinea; New Hebrides; Solomons; New Ireland. *Exp.*, ♂ 62–67, ♀ 72–76 millim.

1149. **Hypsa sericea,** *Moore, P. Z. S.* 1878, p. 3; *C. & S.* no. 536.

♂. Differs from *alciphron* in having a black spot on inner margin at edge of the orange patch. Hind wing with broad black fasciæ in and below cell from the base to the postmedial spots; the marginal black band complete; the veins crossing it yellow.

Hab. Bombay; Poona; Canara; Nilgiris. *Exp.* 60 millim.

1150. **Hypsa producta,** *Butl. Trans. Ent. Soc.* 1875, p. 320; *Moore, Lep. Ceyl.* ii, pl. 101, figs. 1, 1 *a, b* (larva); *C. & S.* no. 535.
Hypsa strigivenata, *Butl. Trans. Ent. Soc.* 1875, p. 321; *C. & S.* no. 537.

Differs from *alciphron* in the basal orange patch of fore wing extending further along the costa, with an extra black spot on the costa.

The form *strigivenata* has the orange and brown colours darker.

Larva. Head large; a series of dorsal tubercles from 4th to terminal somite; purplish brown with sparse hairs, the thoracic somites pale above; some pale lateral spots; a dorsal black line; oblique dorsal streaks on somites seven to ten.

Hab. Sikhim; Assam; S. India; Ceylon; Burma; Penang; Sumatra. *Exp.*, ♂ 56, ♀ 80 millim.

C. (Philona). *Palpi with the 3rd joint very short.*

1151. **Hypsa inops,** *Wlk. Cat.* ii, p. 457; *Butl. Ill. Het.* v, pl. 87, fig. 6; *C. & S.* no. 541.

Head, thorax, and abdomen orange-yellow; the third joint of palpi black; tegulæ and metathorax each with a black spot; abdomen with a series of dorsal black spots, some of which are often obsolete. Fore wing pale fuscous, the veins white; a basal yellow patch spotted with black. Hind wing yellow with an apical black band; cilia of both wings tipped with white.

Hab. Sikhim; Sylhet; Cachar; Nágas; Burma; Philippines. *Exp.* 56 millim.

1152. **Hypsa privata,** *Wlk. Journ. Linn. Soc.* vi, p. 100.
Philona cinerascens, *Moore, P. Z. S.* 1877, p. 598, pl. 59, fig. 6; *C. & S.* no. 540.

Differs from *inops* in the hind wing being white with a marginal black band.

Hab. Burma; Andamans, Borneo, Nias; Flores; Philippines. *Exp.* 52 millim.

SECT. II. (*Lacides*). Male with the fasciculated cilia of antennæ long; 3rd joint of palpi long.

1153. **Hypsa ficus**, *Fabr. Ent. Syst.* iii, 2, p. 27; *Moore, Lep. Ceyl.* ii, pl. 100, fig. 2; *Forsayeth, Trans. Ent. Soc.* 1884, p. 397 (larva); *C. & S.* no. 538.

Head, thorax, and abdomen marked as in *monycha*, except that the third joint of palpi is grey tipped with black; the base of tegulæ yellow with a black spot; dorsal spots of abdomen often almost obsolete. Fore wing with a yellow basal patch which extends along costa and in cell to two thirds length of cell, with an orange spot outlined with black on the costa, and streaks in the cell and on inner margin, two black spots on costa, two in cell, one on inner margin, and two lines across interno-median interspace; the rest of wing pale red-brown, the veins streaked with yellow. Hind wing bright orange-yellow; a black spot at end of cell and a submarginal irregular series.

Larva. Head black; somites dark velvety brown, with slight white hairs arising from red papillæ; lateral yellow patches on 4th to 11th somites.

Hab. Throughout India and Ceylon. *Exp.*, ♂ 58, ♀ 64 millim.

Genus **DIGAMA**.

Digama, *Moore, Lep. E. I. Co.* p. 297 (1859).
Sommeria, *Hübn. Zutr.* iii, p. 13 (1825, *gen. non descr.*).
Homœognatha, *Feld. Reis. Nov., Lep.* pl. cvi, figs. 20, 21, *Erkl.* p. 5 (1874).

Type, *D. hearseyana*, Moore.

Range. S. Africa; China; throughout India, Ceylon, and Burma; Australia.

Palpi upturned, the second joint reaching vertex of head, the third long. Fore wing rather short and square; vein 5 from just above lower angle of cell; 6 from just below the upper angle; 7 and 10 from a short areole. Hind wing with vein 5 from above lower angle of cell; 6 and 7 stalked.

SECT. I. Antennæ of male slightly ciliated; hind wing with tufts of modified scales on median nervure and vein 1 *b*.

1154. **Digama burmana**, n. sp.

Head and thorax brownish fuscous; palpi with a black spot at end of each of the three joints; collar with paired black spots. Abdomen orange-yellow, with dorsal and lateral series of black spots. Fore wing fuscous; the basal half streaked with vinous brown in the interspaces; a highly dentate submarginal band; a marginal series of specks; black spots at base and middle, and two

at end of cell. Hind wing orange-yellow, the apex suffused with fuscous; some specks on apical half of outer margin.

Hab. Myingyan, Burma (*Watson*). *Exp.*, ♂ 30, ♀ 32 millim. Type in B. M.

SECT. II. (*Digama*). Antennæ of male with fasciculated cilia.

1155. **Digama hearseyana**, *Moore, Lep. E. I. Co.* p. 298, pl. 7 *a*, figs. 3, 3 *a*; *C. & S.* no. 549.

Digama similis, *Moore, P. Z. S.* 1878, p. 5; *C. & S.* no. 553.

Head, thorax, and abdomen marked as in *burmana*. Fore wing pale fuscous clouded with duller fuscous; the basal half of wing spotted with black, four spots on costa, three in cell, three in interno-median interspace, and two on inner margin; very irregular dentate submarginal and marginal fuscous bands. Hind wing orange-yellow, with fuscous marginal patches at apex and vein 2 in the form *similis*; the underside of some specimens with a black spot at end of cell.

Hab. Throughout India and Ceylon. *Exp.* 36 millim.

SECT. III. (*Sommeria*). Antennæ of male bipectinated, the terminal one-fifth ciliated. Fore wing with a fold on inner margin on upperside.

1156. **Digama insulana**, *Feld. Verh. zool.-bot. Ges. Wien*, 1868, p. 285; *C. & S.* no. 550.

Differs from *hearseyana* in the collar being without spots. Fore wing without the fuscous suffusion or bands; the third costal black spot from base, and the second in the interno-median interspace, absent. Hind wing with some fuscous on outer margin at veins 2 and 3.

Hab. Ganjam; Nilgiris; Ceylon. *Exp.* 32 millim.

1157. **Digama fasciata**, *Butl. Trans. Ent. Soc.* 1877, p. 362; *Moore, Lep. Ceyl.* ii, pl. 100, fig. 4; *C. & S.* no. 547.

♀. Head, thorax, and abdomen as in *insulana*, except that the patagia have each a black streak. Fore wing greyish fuscous; three black strigæ on the costa; two spots in the cell; the disco-cellulars black; three spots in interno-median interspace; a large subbasal spot above inner margin and two small spots beyond it; a spot beyond lower angle of cell; a curved irregular submarginal band. Hind wing orange-yellow.

Hab. Ceylon. *Exp.* 34 millim.

1158. **Digama marchali**, *Guér. Voy. Deless., Hist. Nat.* p. 91, pl. 26, fig. 2; *C. & S.* no. 551.

Digama nebulosa, *Wlk. Cat.* xxxi, p. 238; *C. & S.* no. 552.

Digama marchalii, *var.* intermedia, *Hmpsn. Ill. Het.* viii, p. 47.

Digama figurata, *Moore, P. Z. S.* 1878, p. 5; *C. & S.* no. 548.

Head, thorax, and fore wing greyish white; the collar, tegulæ, and thorax spotted with fuscous; abdomen orange-yellow, with dorsal and lateral series of black spots. Fore wing with some

Fig. 333.—*Digama marchali*, ♂. $\frac{1}{1}$.

short fuscous streaks near the base; an irregular antemedial band; a black spot at centre of cell and one on discocellulars; a postmedial fuscous band excurved round end of cell; traces of a submarginal band. Hind wing orange-yellow.

The form *intermedia* has submarginal and marginal prominent bands to fore wing; hind wing with a dark marginal speck at vein 2. *Figurata* has nearly the whole fore wing suffused with fuscous, leaving some grey at base and end of cell, a postmedial band, and slight submarginal streaks. Hind wing with irregular fuscous marks on outer margin.

Hab. Bombay; throughout S. India and Burma. *Exp.* 38 millim.

Species formerly recorded as Indian which is omitted.

Hypsa plana, Wlk., C. & S. no. 524, is from Java only.

ERRATUM.

Page 12, line 10, *for* "divided into three plumes" *read* "divided into six plumes."

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